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ABSTRACT

This compilation of materials addresses the use of computers as a tool for instruction, management, communication, and personal productivity in special education. Recommendations are presented for establishing or revising special education technology training programs; recommendations deal with educational need, assumptions, goals, program model, content, support systems, finances, resources, materials, integration, personnel, evaluation, and accessibility. Then, descriptions of special education technology training programs are presented from 23 colleges and universities. Each program description is accompanied by samples of course materials, such as course descriptions, course objectives, course syllabi, student/teacher contracts, workshop materials on cooperative learning and computers, educational program competencies, a training model for higher education in special education technology, information on a switch-building workshop, and a paper by Ted Hasselbring titled "Effective Microcomputer Training and Implementation." A prototype training module is presented for integrating technology into special education teacher preparation courses. The module, which focuses on teaching with crossword puzzles, describes formats of crossword puzzles, their uses in several content areas, and their creation through use of computer software. Also included are the "Code of Ethical Conduct for Computer-Using Educators," developed by the International Council for Computers in Education, and a "Microcomputing Competency Self-Assessment for Special Education Professors." (JDD)

ED311650

Project RETOOL: Training in Advanced Technology Applications in Special Education for Post-Doctoral Leadership Personnel

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Roundtable on Special Education Technology in the Higher Education Curriculum

July 16-17, 1987

Teacher Education Division
The Council for Exceptional Children
1920 Association Drive
Reston, Virginia 22094

EC 221059

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- Long Island University
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- University of Akron
- Ohio University
- The Pennsylvania State University
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- Microcomputing Competency Self-Assessment for Special Education Professors

Introduction

When I first began working for Project RETOOL in 1983, instruction in special education technology at colleges and universities was sporadic, at best. The universities that did offer training in technology tended to focus on computer literacy, which was interpreted as the learning of computer languages such as BASIC and Logo. We have come a long way since then. Colleges of all sizes are now offering stand-alone courses in special education technology, and they are infusing technology applications into other special education courses. The focus now is on the computer as a tool for instruction, management, communication, and personal productivity.

The goal of the Project RETOOL Roundtable on Special Education Technology is to examine some of the lessons we have learned about the ways we train special education teachers in technology and to use that information to plan for the future. The following activities are designed to help us attain that goal:

- Representatives of large, medium, and small institutions of higher education will describe their technology training programs and will share some of their "lessons learned".
- Presenters and participants will discuss factors that facilitate or inhibit the implementation of special education technology programs.
- Presenters and participants will develop a list of recommendations for teacher educators who are charged with the development or revision of special education technology teacher training programs.
- Presenters and participants will share information regarding programs of study, course syllabi, training materials, and other related materials.
- Participants will preview a prototype of a training module that teacher educators can use to develop materials on technology that can be used in non-technology courses.

Preparing for the roundtable has been hectic but fun. The process has been greatly facilitated by the cooperative efforts of the teacher educators who have contributed materials to the notebook. It was especially rewarding to receive materials from several professors who are unable to attend the July meeting but are very interested in outcome of the roundtable. To everyone who has devoted time and energy to the project, I offer a heartfelt thank you.

Elizabeth McClellan Byrom
Project Director

Project RETOOL Roundtable on Technology in the Higher Education Curriculum

Reston, Virginia
July 16-17, 1987

Thursday Morning

I. Introductions

II. Presentations

Discussion leaders will present overviews of their respective technology training programs:

A. Edward Blackhurst - University of Kentucky
Ted S. Hasselbring - Peabody College of Vanderbilt University
Barbara Reeves - Ohio University
Linda O'Donnell - University of Missouri, Kansas City
David Slade - Johnson State College
James Skouge - California State University, Bakersfield

III. Lessons Learned

In this question and answer session, presenters and participants will discuss aspects of their programs that work and those that do not.

Thursday Afternoon

III. Planning a Special Education Technology Program

Presenters will lead small group discussions of the following questions:

How should colleges and universities determine whether they need a special education technology program?
What basic assumptions underlie the incorporation of technology training into the higher education curriculum?
What are reasonable goals for special education technology programs?
How can schools choose the most appropriate program model?
How should teacher educators determine course content?
How can professors of special education technology win support of colleagues and administrators?

How can teacher educators acquire financial support for their technology training programs?
How should program planners decide which brands of hardware and software to purchase?
How can program planners integrate technology into an already crowded curriculum?
Who should teach special education technology?
How can technology courses interface with other special education courses?
How should technology training programs be evaluated?
Other questions

Small groups present findings to the large group for discussion.

Friday Morning

IV. Recommendations

Based on answers to the questions, presenters and participants will work in small groups to draft a list of recommendations that will help colleges and universities plan technology training programs in the future.

Large group discussion.

Friday Afternoon

V. Materials

Ed Blackhurst will present a prototype of training materials that teacher educators can use to infuse technology training into non-technology courses.

Presenters and participants will briefly describe materials they use in their courses. Everyone will have an opportunity to look over the materials.

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Recommendations for Establishing or Revising a Special Education Technology Training Program

The following questions and answers represent the thinking and experience of the thirty teacher educators who participated in Project RETOOL's Roundtable on Special Education Technology in the Higher Education Curriculum. These particular questions were selected because they represent the major components of educational programs: need, assumptions, goals, program model, content, support systems, finances, resources, materials, integration, personnel, evaluation, and accessibility.

The list of recommendations was designed to be inclusive rather than exclusive. Because some recommendations will naturally work better in some colleges than in others, the reader is encouraged to look through the list and select those recommendations that are most likely to be applicable to their particular school. It might also help the reader to know that the recommendations are not in order of priority.

In several places throughout the document, mention is made of The Council for Exceptional Children's policy statement on technology. The statement is as follows:

> The Council for Exceptional Children recognizes that the appropriate application and modification of present and future technologies can improve the education of exceptional persons. CEC believes in equal access to technology and supports equal educational opportunities for technology utilization by all individuals. Present technologies include electronic tools, devices, media, and techniques such as (a) computers and microprocessors, (b) radio, television, and videodisc systems, (c) information and communication systems, (d) robotics, and (e) assistive and prosthetic equipment and techniques. The Council believes in exploring and stimulating the utilization of these technologies in school, at home, at work, and in the community.
>
> CEC encourages the development of product standards and consumer education that will lead to the appropriate and efficient matching of technological applications to individual and local conditions. CEC recognizes the need to communicate market needs and market expectations to decision makers in business, industry, and government.
>
> CEC supports the continuous education of professionals who serve exceptional individuals, through (a) collection and dissemination of state-of-the-art information, (b) professional development, and (c) professional preparation of personnel to perform educational and other services for the benefit of exceptional individuals.

1. How should colleges and universities determine whether they need a special education technology program?

- Assume that all special education programs need integrated technology programs. (See CEC Policy Statement on Technology). For any institution of higher education (IHE), it is necessary to identify legal, certification, and political forces that have implications for program needs.

- Review state and national standards.

- Review empirical data from existing studies of national, state, and local needs.

- Conduct an institutional needs assessment and, if necessary, a state needs assessment. Identify existing and potential resources within the institution, the community, and the state. Examine redundancy and omissions.

2. What basic assumptions underlie the incorporation of technology training into the higher education curriculum?

- Technology empowers people with disabilities. It facilitates and enhances their normalization and integration into society.

- All students have a right to equal access to technology use and instruction.

- Teachers can learn how to use technology, and IHEs can prepare teachers in this area. Teachers can implement training as an integral part of their work with students.

- Technology training programs should be grounded in empirical evidence showing that technology has a positive impact on teaching and learning.

- IHEs should prepare teachers to meet present and future societal technology needs.

- Technology training should fit into the existing IHE structure.

- Resources must be provided to support the implementation of technology in IHE programs.

- Technology is here to stay.

N.B. The CEC Policy Statement on Technology in Special Education presents basic assumptions about the benefits of technology for handicapped individuals and the need to train educators to become effective technology users.

3. What are reasonable goals for special education technology training programs?

- Before determining goals for a special education technology training program, planners should analyze various jobs in special education to differentiate required technology skills and competencies, e.g., for post-doctoral training, researchers, teacher educators, technology coordinators, special education teachers in resource rooms, and special education teachers in self-contained classrooms. Program goals should be linked to these skills and competencies.

  Program planners should also identify technology competencies that are specific to special education as well as those common to regular education; planners should develop goals accordingly. They should make use of goals developed by model programs.

Sample Goals:

- Train professionals to use technology to improve the lives of handicapped individuals.
- Prepare teachers to use current technology and to continue to learn to use new technology.
- Technology support personnel should be able to provide technology troubleshooting, training, consultation, and support.

4. How can colleges and universities choose the most appropriate program model?

- Conduct a self-study to determine needs and resources.
- See that the program model flows naturally and logically from program goals.
- Survey and synthesize existing models, including those outside special education.
- Consider cooperative efforts with other departments, institutions, and local education agencies.
- Consider the market, mission, mandates, resources, and political forces in the immediate as well as long range future.

5. How should teacher educators determine course content?

- Technology course content should lead graduates to develop a range of competencies, including the following:

    use technology as a tool to achieve personal and professional goals.

    match students' learning needs and styles with characteristics and capabilities of hardware, software, and peripherals.

    integrate technology into the special education curriculum.

    teach students to use technology as a personal and educational tool.

    ensure equal access to technology (gender, economic status, ethnic background).

    evaluate the effectiveness of technology applications in enhancing student learning and communication.

- Analyze existing courses to determine overlaps, omissions, and sequence of courses.

- Use the same methods for determining technology related course content as faculty use to determine content for other courses.

- Examine CEC/RETOOL prototype material.

6. How can professors of special education technology win support of colleagues and administrators?

- Be a role model by demonstrating effective practices. Serve as a consultant and support person for novice computer users. Do not use undue pressure.

- Identify key people (stake holders and gate keepers), and bring them to the planning table. Develop a realistic plan.

- Plan and implement a faculty and staff development program.

- Show results. Present research findings on the effectiveness of technology. Follow-up successful graduates, and share the positive reactions of employers and colleagues. Obtain funding.

- Explore program possibilities with many specialists and colleagues.

- Determine how decisions are made within the college, and work within the system.

  OR

- Develop a program, implement it, and then get formal approval.

7. How can teacher educators acquire financial support for their technology training programs?

- Become informed about sources of funding, including the following: a) federal, state, private, and industry grants, b) lotteries, and c) foundations.

  Become a grant proposal reviewer to become sensitive to effective grant preparation strategies.

  Check the RFP bulletin board on SpecialNet.

  Check the ASHA Research Bulletin Board on SpecialNet.

  Ask informed sources, e.g., parent groups, associations.

- Become informed about the college's budget process. Join budget committees.

- Establish a computer user fee. Use the proceeds to support the technology training program and facilities. Show that technology training is cost effective.

- Seek cooperative agreements with technology corporations, e.g., discounts on hardware purchases.

- Bargain within the institution and with local industries and professional organizations. Seek surplus equipment unless it is obsolete.

- Work with student organizations to conduct fund raisers.

8. How should program planners decide which brands of hardware and software to purchase?

- Hardware and software should have the functions and capabilities required to meet the goals of the program. Buy machines with the maximum potential for expansion and long term use.

- Let software drive the purchase of hardware.

- Require product support after purchase.

- Look for a package deal.

- For instruction, use the same computers that are available in area schools.
- Keep in mind the needs of community groups in making decisions.
- Expose students to several computer brands and models, including state-of-the-art machines.
- Identify brands the State Department of Education recommends and will pay for.
- Review research on effective computer usage.
- Compare reviews in periodicals.
- For software:

    Identify the purposes and functions.

    Examine reviews.

    Check data bases of software, e.g., CEC's Center for Special Education Technology.

    Preview software.

    Explore site licensing.

- Insist that software be free of bias related to gender, ethnicity, culture, and handicapping condition.
- Have a team of new product reviewers.

9. How can program planners integrate technology into the existing curriculum?

- Look at the college's goals for special education, and examine ways technology can be used to meet those goals.
- Examine the current curriculum. Decide whether changes are needed. Is the curriculum crowded? Is some content obsolete? Does some content belong in other areas? Can courses be combined? Can technology related entry level skills be treated as prerequisites.
- Define the scope and sequence of technology related topics.
- Collaborate with faculty from other units to increase efficiency. Try team teaching. Share resources. Make joint presentations at conferences.
- Develop modules to infuse technology into existing special education courses.

- Use technology routinely in the teaching process as an instructional tool. See where current instructional activities can be enhanced by technology, e.g., using computers to write IEPs, lesson plans, research papers).

- Provide faculty incentives for planning.

10. Who should teach special education technology?

- Match programmatic needs with the skills of the faculty.

- Establish a staff development program to build faculty skills and competencies so they can use technology in their courses.

- For technology courses select competent trainers, as opposed to those who can and will teach the courses. Be wary of computer science faculty or those with a "techie" orientation who may not understand teaching or technology applications for handicapped children.

- Professors should be both content area experts in special education as well as competent computer users.

- In the absence of trained faculty, use part-time practitioners who are applying technology, e.g., classroom teachers.

- Professors should be sensitive to and trained in meeting the needs of culturally diverse handicapped learners.

11. How should technology training programs be evaluated?

- Develop a long-range evaluation plan as the program is being developed. Include formative and summative evaluation strategies.

- Adopt or adapt evaluation models and methods used in other programs. Identify the variables that are particularly relevant for technology use.

- Identify the evaluation questions. For example: Were the goals met? Does the program have an effect on graduates and handicapped children?

- Let the evaluation questions dictate the types of data to be collected. Include qualitative and quantitative information.

- Measure identified competencies as the program evolves.

- Keep empirical data on the program.

- Continue to consider ethical responsibilities in technology training.

- Examine the program's effectiveness in meeting the needs of racially and culturally diverse handicapped populations generally underserved or not served.

- Use the evaluation data to revise the curriculum and procedures.

- Conduct a long term follow-up study of graduates and their employers.

12. How can equal access to technology training programs be guaranteed for traditionally underrepresented groups?

- Ensure that persons representing different ethnic and racial groups, genders, SES, and handicapping conditions have access to technology, are trained to use it, and can serve as role models and educators among members of the groups they represent.

- Promote awareness that technology issues come under the rubric of due process, access, and fair treatment. In technology courses, address equity issues,e.g., access, opportunity, rights.

- Intensify efforts to provide access to hardware and software to at-risk populations. Explore various alternatives for loaning technology to low income students.

- Conduct research to see how barriers to technology use have been reduced in other populations to see if there are lessons that can be applied to people from culturally different environments.

- Review research on technology use and variables related to diverse populations, e.g., socioeconomic status, ethnicity, race. Identify software and related technologies that have particular relevance and effectiveness for culturally diverse students.

- Identify learner characteristics of culturally diverse students that have implications for technology use.

New training program in special education technology	Established training program in special education technology	Leading edge training program in special education technology	Technology training at the under-graduate level	Technology training at masters and education specialist levels	Technology training at the doctoral level	Technology training at the post-doctoral level	Major or minor in educational technology	Major or minor in special education technology	TYPES OF PROGRAMS	
•				•					California State University—Bakersfield	CA
	•			•				•	San Jose State University	CA
	•			•			•	•	Gallaudet University	DC
•			•	•	•				Northeastern Illinois University	IL
				•			•		University of Illinois at Chicago	IL
		•	•	•	•	•		•	University of Kentucky	KY
		•		•	•		•	•	The Johns Hopkins University	MD
		•	•	•	•			•	University of Maryland	MD
	•		•	•			•		Fitchburg State College	MA
•				•					University of Missouri at Kansas City	MO
•			•						Monmouth College	NJ
		•	•	•			•		Trenton State College	NJ
	•		•	•			•	•	Long Island University	NY
•				•					State University College—Buffalo	NY
•			•	•					University of Akron	OH
•			•						Ohio University	OH
		•	•		•		•		The Pennsylvania State University	PA
•			•						West Chester University	PA
•			•	•			•		College of Charleston	SC
	•	•	•	•	•				Peabody College of Vanderbilt Univ.	TN
	•			•					Lamar University	TX
		•		•	•			•	George Mason University	VA
	•		•	•					Johnson State College	VT

Course(s) in special education technology	Course(s) in general education technology with segments on special education	Technology segments in special education courses	Faculty conducts research in special education technology	Faculty and students use technology as an instructional tool	IHE operates technology training project	IHE sponsors conferences or workshops in special education technology	TYPES OF FORMATS	
	•						California State University—Bakersfield	CA
•		•	•	•	•	•	San Jose State University	CA
•			•	•	•		Gallaudet University	DC
•		•					Northeastern Illinois University	IL
•		•	•	•	•		University of Illinois at Chicago	IL
•		•	•	•	•	•	University of Kentucky	KY
•	•		•	•	•	•	The Johns Hopkins University	MD
•	•		•		•		University of Maryland	MD
•	•	•					Fitchburg State College	MA
					•	•	University of Missouri at Kansas City	MO
	•				•		Monmouth College	NJ
		•	•	•	•	•	Trenton State College	NJ
•			•			•	Long Island University	NY
•		•					State University College—Buffalo	NY
•	•		•				University of Akron	OH
•	•	•			•		Ohio University	OH
•		•		•	•		The Pennsylvania State University	PA
	•	•					West Chester University	PA
•	•	•		•			College of Charleston	SC
•		•	•	•	•	•	Peabody College of Vanderbilt Univ.	TN
	•	•					Lamar University	TX
•		•	•	•	•		George Mason University	VA
•		•		•		•	Johnson State College	VT

CALIFORNIA STATE UNIVERSITY - BAKERSFIELD

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Bakersfield, CA 93311

Phone: 805-833-2182

SpecialNet: CACSB

Number of special education students:

Undergraduate: Graduate: 75

Program Description:

Faculty at CSB have developed a five year plan aimed at upgrading faculty skills and improving hardware and software resources. The School of Education offers several courses on technology applications, including special education applications

Cal State Bakersfield
Program Description

The special education program at Cal State Bakersfield consists of three graduate-level training strands:(1) the Learning Handicapped Credential; (2) the Resource Specialist Certificate; and (3) the Master's Degree. The Learning Handicapped credential prepares teachers for special day classes. We award approximately 15-20 LH credentials annually. The Resource Specialist Certificate prepares teachers for special education pull-out programs. We award approximately 20-25 RSP certificates bi-annually. Finally, aproximately 8-10 students earn the Master's Degree annually. Approximately 25 of our current LH credential candidates are bilingual teachers pursuing the credential on federal scholarships. This grant is in response to a critical regional shortage of bilingual, special education teachers. We have no undergraduate training program at Cal State Bakersfield.

The reader is referred to the attached lavender cycling sheet for a course-by-course summary of the program.

1987-88 Advising Sheet and Schedule

M.A./SPECIAL EDUCATION, GENERAL

LEARNING HANDICAPPED SPECIALIST CREDENTIAL

		REQUIRED COURSES			TENTATIVE CYCLING			
		Units	MA	SC	F'87	W'88	S'88	SS'88
PREREQUISITES								
A Valid Teaching Credential								
ED-SP 501	Intro. to Educ. of Exceptional Children and Youth	(5)	(●)	(●)	●	●	●	
ED-SP 542.002	Observation in Special Education	(2)		(●)	●			
CORE (Minimum 6 quarter units)								
ED-RS 680.001	Educational Statistics	4	●		●	●	●	
ED-RS 680.002	Research Design & Analysis in Education	3	●		●	●	●	
CONCENTRATION (Minimum of 34 quarter units)								
ED-SP 505	Applied Behavior Analysis in Special and Remedial Education Classes	3		●	●			
ED-SP 507	Education of the Emotionally Disturbed	5		●			●	
ED-SP 508	Dev. Assessment of Sensorimotor, Perceptual & Cognitive Skills for Except. Children	5	●	●	●			
ED-SP 550	Methods of Reading & Mathematics Instruction for Special Education Students (Prerequisites: mult. subj. cred. read/math meth., ED-SP 505, ED-SP 508)	5		●		●		
ED-SP 621	Counseling Exceptional Children & Their Parents (Prerequisite ED-SP 505 or its equivalent)	5	●	●		●		
ED-SP 622	Advanced Curriculum Development, L.H. (Prerequisites: ED-SP 505, 507, 508, 550, 621, or by special permission)	5		●			●	
ED-SP 623	Fieldwork Placement Seminar (Concurrent with or prerequisite — ED-SP 622)	2		●			●	
ED-SP 624.001 AND ED-SP 624.002 OR ED-SP 625.010	L.H. Student Teaching—L.H. classroom emphasis L.H. Student Teaching—Mainstreaming Emphasis ☐ or b. Practicum—L.H. ☐	5 + 5 or 10		●			●	●*
(ED-SP 625 open only to candidates teaching on an emergency L.H. credential)								
ED-RS 670	Single Subject Research Design for Classroom Based Research	3	●		●			
ED-SP 688	Research in Special Education	3	●			●		
___________	CSB Grad. Elective Course: ___________ (to be determined by candidate & advisor)	3-5	●					
Electives in Special Education								
ED-CI 549	Diag. & Remediation of Lrn. Prob. in Math	5				●		
ED-AD 515	Administration & Supervision of Special Education	3						
ED-SP 672	Self-development of Exceptional Children	5						
ED-IS 699	Individual Study in Grad. Educ. (Special Education)	1-5			●	●	●	●
Resource Specialist Certificate (SP-ED Cred. Prereq.)†								
ED-SP 651	RSP I — Role & Legal Mandate	3						
ED-SP 652	RSP II — Diagnostic Assessment	3						
ED-SP 653	RSP III — Instructional Function	3						
ED-SP 654	RSP IV — Comm. Strategies/Parent Education	3						
CULMINATING ACTIVITY (Select one of the following)			●					
ED-CA 690	Master's Thesis in Education	5			●	●	●	●*
ED-CA 691	Master's Project in Education	5			●	●	●	●*
ED-CA 692	Master's Examination in Education	5			●	●	●	●*
MINIMUM UNITS REQUIRED FOR MA DEGREE			45					
MINIMUM UNITS REQUIRED FOR SPECIALIST CREDENTIAL				45				

*Depending on availability of Program Advisors

NEW PROGRAM OFFERING

The Special Education faculty has received Commission approval to offer the Advanced Specialist Credential in SEVERELY HANDICAPPED starting fall quarter 1986. A Multi-Cultural-Bilingual/Special Education credential is also in the developmental stage.

†The next cycling of the RSP Certificate is in AY 1988-89. Please fill out a letter of interest in the Credentials Office.

See General Information on Back.

'87

SCHOOL OF EDUCATION
California State College, Bakersfield
9001 Stockdale Highway
Bakersfield, CA 93311-1099

PROGRAM PLANNING/ADVISING

All plans for graduate programs should be coordinated with an advisor. Students select courses with an advisor from a current Advising Sheet. Other courses either in Education or related academic disciplines can be planned with the advisor's consent. Courses taken without expressed approval of an advisor may not be accepted toward the program. Petitions for substitutions, waiver of requirements, or extension of the 7-year limit may be obtained from an advisor.

ACADEMIC STANDARDS

Graduate degree/credential candidates are governed by the academic standards for graduate students at CSB. A B- or better is considered unconditionally passing for the L.H. credential and/or MA in Special Education requirements. Grades lower than a B- will be individually evaluated by the whole Special Education faculty and appropriate additional requirements may be considered. (See Special Education advising brochure.) A 3.0 g.p.a. must be maintained on all applicable work.

TIME LIMIT FOR THE M.A. DEGREE

An MA program may not contain units over 7 years old when awarded.

MAXIMUM UNITS ALLOWED FOR THE MA

Individual Studies	10 q.u.
Academic Supporting Studies	10 q.u.
Nonoptional CR Grades	10 q.u.
Transfer Credit	13 q.u.

(Extension units count as transfer)

UPPER DIVISION WRITING COMPETENCY

All degree/credential applicants to the School must fulfill this requirement before completing 15 units. Students fulfill this requirement by passing one of the following: English 304, 306, 310, 410, 505, History 300 (B or better), or a test which is offered each quarter (135 score or higher). Contact the English Department for more information (833-2144).

CALIFORNIA BASIC EDUCATIONAL SKILLS TEST — CBEST

Anyone now applying to the Commission on Teacher Credentialing for the initial issuance of a basic credential (mult./single), services credential (Adm./Pupil Personnel) or renewal of an emergency credential is required to pass the CBEST. Students register at the CSB Counseling and Testing Center (833-2131).

This program offers coursework leading to a *Master of Arts Degree in Education* (MA) with a concentration in Special Education, General and *Ryan Special Education Advanced Specialist Credential in Learning Hand capped.* In addition, CSB has been authorized by the Commission on Teacher Credentialing to grant the *Special Education Resource Specialist Certificate of Competence* (offered on an as-needed basis), and the *Ryan Special Education Advanced Specialist Credential in Severely Handicapped.*

The experiences and courses in Special Education at CSB are designed to focus on elementary or secondary curriculum and instruction for children with special needs. Courses cover both ends of the special education spectrum and will be augmented with future offerings.

The primary orientations are toward improvements of teaching to the "master teacher" level, design and development of curricula, and utilization of research in teaching. Appropriate concerns are methods, materials, plans, research data and procedures related to particular areas of special education curricula, instructions, and evaluation.

Applications are accepted during the Fall, Winter and Spring quarters. See the Special Education Advising Brochure for admission requirements and procedures.

FOR FURTHER INFORMATION CONTACT:

PROGRAM ADVISORS	**OFFICE**	**PHONE**
June Webb, Ph.D., Program Coordinator	DDH/CC209	833-3046
George Calhoun, Jr., Ph.D. Acting Chair, Department of Special Education	DDH/CC216	833-3067
James Skouge, Ed.D.	DDH/BB202	833-2182
GRADUATE STUDIES IN EDUCATION		
Janice Moore, Grad. Evaluation Technician	DDH/BB212	833-3193
Patricia Tomaras, Department Secretary	DDH/CC217	833-3055
CREDENTIALS OFFICE		
Carole Harden, B.A., Credential Analyst	DDH/BB210	833-3074
OFFICE OF THE DEAN, School of Education	DDH/B100	833-2219
FINANCIAL AIDS		833-3016
FOR CATALOGS CALL GOLDEN EMPIRE BOOKSTORE		833-2273

CALIFORNIA STATE COLLEGE, BAKERSFIELD
SCHOOL OF EDUCATION

Office Hours: Tue. 2:00-3:00 pm
and by appointment.

James Skouge, Ed.D.
DDH/BB 202

Office: 833-2182 or 3192
Secty: 833-3055

G-ST 190 (Fall 1986, 2 units)
Introduction to Microcomputers -- Apple IIE
Apple Lab (DDH K101), 10:00-12:00, T-Th

COURSE DESCRIPTION

An overview of the basic "tool" uses of Apple IIE microcomputers, including the "integrated" AppleWorks word processing, data base and spreadsheet applications; pictorial (artistic) and numeric graphics; telecommunications; and a general orientation to the Macintosh, IBM PC and the mainframe computers. The course will address both technical skills and theoretical implications.

REQUIRED TEXT

Rathje, Linda (1986). Appleworks for Educators. A Beginner's Workbook. International Council for Computers in Education: Eugene, OR.

SELECTED REQUIRED READINGS

Taffee, Stephen (1986) Computers in Education (Second Edition) The Dushkin Publishing Group, Inc.: Sluice Dock, Guilford, CONN

COURSE OBJECTIVES

1. To introduce the student to the basic AppleWorks features to permit independent program use.
2. To expose the student to the broad range of features available in an integrated three-application package.
3. To introduce the student to pictorial (artistic) and numeric graphics applications.
4. To introduce the student to remote computing applications (including micro-to-mainframe, local area networks, national data bases, and electronic mail services).

BEST COPY AVAILABLE

5. To challenge the student to envision creative applications of microcomputers in his/her personal, scholarly and professional life.

6. To challenge the student to consider ethical and futuristic issues relative to computers.

7. To introduce the student to computing journals by requiring library research.

COURSE REQUIREMENTS

1. Active class participation, including the completion of weekly homework assignments.

2. Three competency exams (AppleWorks word processing, data base and spreadsheets)

3. Three 3-page research papers (each referencing a minimum of 3 articles), addressing any three of the following (or topics negotiated privately with the instructor):

-- Word Processing: Implications for my life.

-- Data Bases: Implications for my life.

-- Spreadsheets: Implications for my life.

-- Graphics: Implications for my life.

-- Telecommunications: Implications for my life.

-- A futuristic view of computers in society.

-- The computer in society: Ethical issues

GRADING POLICY

1.	Homework	62 points (= 25%)
2.	Competency Exam 1	38 points (= 15%)
3.	Competency Exam 2	33 points (= 15%)
4.	Competency Exam 3	33 points (= 15%)
5.	Research Paper 1	25 points (= 10%)
6.	Research Paper 2	25 points (= 10%)
7.	Research Paper 3	25 points (= 10%)

Total = 251 possible points

NOTE: The instructor can award up to 25 bonus points for unexpected contributions.

A = 94% (or higher) = 235 points (or more)
A- = 90-93% = 225-234 points
B+ = 87-89% = 218-224 points
B = 83-86% = 208-217 points
B- = 80-82% = 200-207 points
C+ = 77-79% = 193-199 points
C = 73-76% = 183-192 points
C- = 70-72% = 175-182 points

CLASS MEETING SCHEDULE

1. (Sept. 18, Th)	Syllabus Overview: Intro to Integrated Applications Software.
2. (Sept. 23, Tue)	The care and feeding of your microcomputer.
3. (Sept. 25, Th)	Word Processing
4. (Sept. 30, Tue)	Word Processing
5. (Oct. 2, Th)	Word Processing
6. (Oct. 7, Tue)	Word Processing
7. (Oct. 9, Th)	Word Processing
8. (Oct. 14, Tue)	Data Base
9. (Oct. 16, Th)	Data Base
10. (Oct. 21, Tue)	Data Base
11. (Oct. 23, Th)	Data Base
12. (Oct. 28, Tue)	Spreadsheet
13. (Oct. 30, Th)	Spreadsheet
14. (Nov. 4, Tue)	Spreadsheet
15. (Nov. 6, Th)	Graphics
16. (Nov. 12, Wed)	Graphics
17. (Nov. 13, Th)	Telecommunications
18. (Nov. 18, Tue)	Demonstration of Other Micro's and Mainframe
19. (Nov. 20, Th)	Demonstration of Other Micro's and Mainframe
20. (Nov. 25, Tue)	Ethics and Futuristics

21. (Dec. 4, Th) 11:00 a.m. to 2:00 p.m. FINAL EXAMINATION (if required)

COURSE SYLLABUS FOR EDCI 546.001
Computers in the Elementary School
Spring 1987

COURSE MISSION AND SCOPE

The intent of this course is to assist educators in developing sound pedagogical strategies and instructional techniques for using microcomputers in education.

Moursund has defined Computer Literacy as a functional knowledge of computers and their effects on students and on the rest of our society. The course objectives for Microcomputers in Education will enable inservice teachers to acquire competencies qualifying them as computer literates. Inservice teachers can become computer literates by (through):

1. Readings;
2. Lab experiences with microcomputers;
3. Evaluating computer software;
4. Using microcomputers with children;
5. Class discussion about computer utilization; and
6. Writing programs (software) for computers.

COURSE ORGANIZATION

In an attempt to fulfill its mission, this course has been divided into four components: lecture, discussion, laboratory, and outside work. During lecture and discussion, you will be considering content, methods, materials, strategies and other areas related to the teaching with computers. Your work outside of class will be devoted to furthering and enriching those experiences. Laboratory time is designed to provide exposure and experience with the various materials available for use with microcomputers.

COURSE COMPETENCIES AND RELATED OBJECTIVES

Upon completion of the course, you should possess the following competencies (1, 2, etc.) with respect to microcomputers and education as evidenced by the related objectives (A, B, etc.):

[Commencing July 1, 1988, all Commission-approved institutions that recommend candidates for the Clear Multiple or Single Subject Teaching Credential shall provide evidence that the candidate has successfully completed a program in which he or she was required to do the following:]

1. Identify issues involved in the access to, use, and control of computer-based technologies in a democratic society, including, but not limited to:

    A. the potential for positive and negative impacts upon the quality of life in the workplace, the home, the market place, and leisure activities;
    B. the moral, legal, and ethical implications; and
    C. the economic and social implications including the need to provide equitable access to the benefits of technology.

2. Demonstrate:

    A. knowledge of basic operations, terminology, and capabilities of computer-based technology (including telecommunications, interactive video and compact disk);
    B. use of computer hardware, software, and system components for their various functions.

3. Appropriate to the subject area and grade level, demonstrate a basic understanding of and an ability to use representative programs from each of the following categories:

    A. computers applications and tools such as word processing, data bases, graphics, spreadsheets, telecommunications, networking, and program languages;
    B. computer-assisted instruction and learning, such as simulations, demonstrations, tutorials and drill and practice; and
    C. teacher utility programs such as those for record-keeping, generating instructional materials, and managing instruction.

4. Demonstrate, within appropriate subject areas and grade levels, the application and use of a computer-based technology as a tool to enhance the development of problem solving skills, critical thinking skills, or creative processes. Examples of such skills and processes are: gathering and analyzing data, generating and testing hypotheses, classifying, comparing and contrasting, inferring, evaluating, composing, and designing.

5. Demonstrate the integration of a computer-based application into instruction in the candidate's selected subject area and/or grade level.

COURSE MATERIALS

The are no required textbooks to be purchased. Materials will be supplied by the instructor or by the student (e.g., readings, commercial software, microcomputers, blank diskettes, examples and instructions for programming in BASIC and Logo, etc.).

ASSIGNMENTS

A. Laboratory

Familiarity with a number of materials used with microcomputers will be essential to your successful use of computers in an educational setting.

You will have the opportunity to use the Apple IIe and IBM PC computers. These computers will provide you with the opportunity to experience (hands-on) the strengths and weaknesses of CMI, CAI, BASIC, Logo, etc.

As part of the basic course requirements you will be asked to assess computer materials. You will have the opportunity to critique the materials you have experienced. When possible you should bring students to class. They can run the software and you can evaluate the software based on actual student interaction. Plan to spend 80% of class time with a microcomputer.

1. Computer Literacy: Evaluating and Utilizing Microcomputer Hardware and Software

In this course you will have the unique, but demanding opportunity of getting acquainted with microcomputers and educational software. You should spend a minimum of 30 minutes per class during the course reviewing software.

Your goals during software evaluation are to 1) learn how to load and view various programs and, 2) to evaluate the content and format of each program. Evaluation forms will be provided.

These evaluation forms will be turned in on a regular basis (see calendar). Any difficulties you have in working with the microcomputers and assignment deadlines should be discussed with the instructor.

2. Computer Literacy: Computer Programming

You will also be required to complete some computer program exercises. The calendar will list dates for assessing competence.

B. Outside of Class Readings

Students are responsible for reading chapters/articles from the readings listed in the class calendar or distributed in class. Please try to have each reading completed when listed, since we'll be utilizing the ideas you have read about during class discussion. The evaluation of your understanding of these readings will be done either as part of the mid-quarter or the final examination.

1. Before you evaluate any computer programs read Evaluator's Guide For Microcomputer-Based Instructional Packages.
2. During the quarter you should plan on reading those articles or chapters which provide background information for discussion sessions or lecture.
3. Read Spotlight On Computer Literacy, Chapters 1-12 and Cooperative Learning and Computers, 1-3 as suggested by the class calendar or within the first 5 weeks of the course.

GRADING

A prime concern among the students is grading. How will this occur for a course such as this? While I am not particularly enthused about grading, it is a reality which must be reckoned with.

Since some of the assignments are not ultimately due until late in the course, it is in your best interest to complete and hand in early as many as possible. Please follow the due dates on the calendar to pace your work.

Each examination will be worth from 100 to 300 hundred points. You will receive a fraction on each graded assignment or test that represents the point earned/points possible (e.g., 80/100). The final grade will be determined by the percentage of points earned out of the total possible points. The percentages and grades are:

A	for	93	through	100.00%	C	for	74	through	76.99%
A-	for	90	through	92.99%	C-	for	70	through	73.99%
B+	for	87	through	89.99%	D+	for	67	through	69.99%
B	for	84	through	86.99%	D	for	64	through	66.99%
B-	for	80	through	83.99%	D-	for	60	through	63.99%
C+	for	77	through	79.99%	F	for	below		60.00%

Graded Assignments:	
Eight computer software evaluations @ 50 points each	400 points
Writing An Implementation Plan for a Computer-based Instructional Program (Alternative Choice)	400 points
Tests:	
Mid-quarter Exam	50 points
Final Exam	50 points
Other:	
Class Participation (Evaluated by Peers/Instructor) ...	100 points
TOTAL Points	1000

ATTENDANCE AND CLASS DISCUSSION

Participation in class discussions and interaction with other students during class, lab or small group activities will enhance your learning opportunities. It is your responsibility to help me learn your name. Assertive student/learning behavior is encouraged in this class.

FINAL COMMENTS

While the requirements may seem ominous at first, they are quite attainable by any student with commitment and the wisdom to budget time. It is my hope that you will dispense with worry over grading and immerse yourself into the goal of learning to become a computer educator.

IF AT ANY TIME YOU FEEL AN ASSIGNMENT OR EVALUATION IS IRRELEVANT OR UNFAIR, I INVITE YOU TO DISCUSS AN EQUIVALENT AND EQUITABLE SUBSTITUTION. LIKEWISE, I INVITE YOU TO CONTRACT THIS COURSE IN AN ALTERNATE WAY TAILORED TO YOUR NEEDS.

The instructor reserves the right and responsibility for modifying the course syllabus as the need warrants.

SAN JOSE STATE UNIVERSITY

Mary Male
San Jose State University
1 Washington Square
San Jose, CA 95192

Phone: 408-277-2646

SpecialNet: SJSU

Number of special education students:

Undergraduate: 100   Graduate: 100

Program Description:

San Jose State students can minor in special education technology. Special education students can take stand-alone technology courses, and can learn from modules in other courses. SJSU holds technology conferences and provides a community based technology center.

EDSE 141 - Computers and Special Education Instruction

Spring, 1987 Thursday, 4 p.m.
Dr. Mary Male
SH 230
277-2646 Office hours: 9a.m. - 2 p.m.Mon and by appointment

REQUIRED TEXTS

Babbie, Apple Logo for Teachers

Recommended

Goldenberg et al. Computers, Education, and Special Needs

Papert, Mindstorms

Supplemental materials provided by instructor (nominal fee may be required)

COMPETENCIES

As a result of the course, students will be able to:

1) evaluate CAI software for students with special needs;
2) use word processing to design individualized student lessons and teach students how to use word processing as a tool for their own learning;
3) make designs using turtle graphics, use list processing capabilities of Logo, and teach students with special needs how to use Logo as a tool for critical thinking;
4) design individualized lessons incorporating graphics and speech synthesis with an authoring system;
5) use a spreadsheeet and data base management program to teach organization, critical thinking, and problem solving skills for students with special needs.
6) describe the purpose and function of adaptive devices for physically disabled computer users.

COURSE REQUIREMENTS

Each student's grade is based on a contract, in which the student specifies a combination of written assignments, a special project, participation in family open houses, observations, mid-term, and final.
Each student is expected to fulfill the requirements of his/her contract. No late work will be accepted.

Special Project Requirements

1. Consultation with instructor on the topic and outcomes of the project, related to the outcomes of the course;
2. Brief presentation (5-10 minutes) and handout (1-2 pages) on

the the results of the project.

Written assignments

1. Integrating Software into the Curriculum Due 2-12

Design a lesson which uses a piece of software reviewed in class to assist in accomplishing the lesson objective in a powerful way.

2. Word processing Due March 5

Develop three lessons using a word processor to teach/remediate reading, writing, or spelling skills for the students you expect to work with.

3. Logo Due March 27

Teach three lessons to one or more students using turtle graphics. Write a 2-3 page paper summarizing 1) what you did and 2) what were the results.

4. Data bases and spreadsheets Due April 9

Design a lesson using data bases or spreadsheet to teach a skill or concept applicable to the students you teach.

5. Authoring systems Due May 7

Develop a lesson using an authoring system.

Family Open Houses

Every other Sunday during the semester, the Special Technology Center at SJSU will have an informal open house in which parents, kids, and teachers can try out appropriate software and adaptive devices. You can assist at these open houses by helping to identify software, participating with the student as they work with a piece of software or adaptive device, or by inviting parents/students to attend!

CALENDAR

1-29	Overview: Integrating software into the curriculum
2-5	Software (cont'd)
2-12	Software (cont'd)
2-19	Word processing (including talking word processors)
2-26	Word Processing to teach reading, writing, spelling
3-5	Logo
3-12	Logo (cont'd)
3-19	Logo (cont'd)
3-26	Data bases
4-2	Data bases cont'd
4-9	Spreadsheets; mid-term
4-20	Spreadsheets cont'd

4-27 Authoring
5-7 Adaptive devices telecommunications
5-21 Final exam

CONTRACT

The grade I would like to make in EDSE 241 is . In order to get that grade, I agree to do the following:

The instructor agrees to provide relevant and helpful information, design tasks to apply this information, give prompt and fair feedback on performance, and to support my success as a computer-using special educator.

Using the point values listed below, select your own combination of activities and points to determine your grade and course requirements.

Point values of Course Assignments:

5 written assignments:	10 points each
Mid-term:	20 points
Family open houses	10 points each
1 Special Project:	20 points
FINAL (required)	40 points

For an A: 90
For a B: 80
For a C: 70
For a D: 60

Special Magic: Computers, Classroom Strategies, and Exceptional Students

by Mary Male, Ph.D.
Associate Professor
Division of Special Education and Rehabilitative Services
San Jose State University, CA 95192

Publisher: Mayfield Publishing Company
1240 Villa Street
Mountain View, CA 94041
Publication Date: January, 1988

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    - Guiding Principle 5: Ease of Use
    - Guiding Principle 6: Size and Clarity of Print
  - Types of Software
    - Drill and practice/Educational Games
    - Tutorial
    - Simulations and Problem-Solving
  - Software and the Individualized Education Program
    - Basic Skills - Reading
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1: List of Software
2: List of Hardware
3: List of Publications
4: List of Organizations

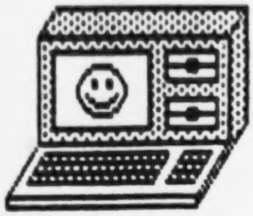
5: [illegible] Resources
6: List of Conferences

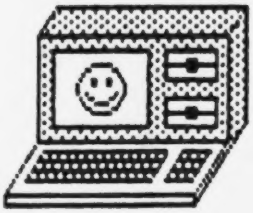
(The Appendices will also be available on a disk to edit with AppleWorks or FredBase, if FredBase is available in time)

COOPERATIVE LEARNING AND COMPUTERS

A WORKSHOP

DR. MARY MALE
DIVISION OF SPECIAL ED
SJSU
277-2646





Cooperative Learning and Computers

GOALS:

You will be able to:

o review software to determine its suitability for cooperative lessons;
o structure a cooperative lesson using selected pieces of software

Agenda

Welcome, introductions, goals, ground rules

Introductory activity

Review of essentials of cooperative learning

Video clip of "The Factory" - discussion

Sample lesson: The Factory

Sample lesson: Crossword Magic

Sample lesson: Where in the world is Carmen Sandiego?

Lesson planning exercise: Logo, FredWriter, Square Pairs, or Survival Math (or your own choice of appropriate software)

Share

Summary, evaluation

LESSON PLANNING GUIDE
(Fill in the specifics for your lesson in the spaces below)

Cooperative Learning Strategy: (Learning Together, Jigsaw, Teams Games Tournaments, or your own variety)______

Subject Area:

Grade Level:

I. Objectives:

A.

B.

C.

II. Materials Required:

III. Time Required:

IV. Procedures

- **A. Preparation**
  - **1. Assemble needed materials:**
  - **2. Make sure you know how to operate the software:**
- **B. Set**
  - **1. Focus:**
  - **2. Procedures:**
  - **3. Objective:**
- **C. Input**
  - **1. Present concepts:**
  - **2. Model use of software:**
  - **3. Set group goal:**

4. Teach social skills:

5. Assign students to teams:

6. Check for understanding of concepts, cooperative learning process to be used, social skills and behaviors expected:

D. Guided practice

1. Distribute materials to teams:

2. Monitor team performance and mastery of content and group process.

E. Closure

1. How will you check to see that each student has mastered the skill?

2. Give feedback to team on performance.

3. Lead processing/debriefing of lesson ("What did you do to help someone learn? What did someone do to help you? How can your group do even better next time?" - add your own questions)

4. Provide recognition/rewards to teams for improvement, performance of group skills, mastery of concepts:

F. Independent practice (Homework, extension activities, etc.)

FREDWRITER TASK

You and your teammates are going to write a story about a haunted house.

Before you begin your story, do some brainstorming.

WHO (Characters) **Did What?** (Action) **Where?** (Describe the setting)

After you've brainstormed, you will be creating a three-paragraph story, with a Beginning, Middle, and End. Any one of you may be called on to show your story to the class and read it aloud. Your team will earn bonus points toward your individual grade if your story is spelled correctly, uses correct punctuation, and makes sense. Extra points for creativity and suspense!

One person on your team will be the **Idea Generator** (to be the first one to share ideas); one person will be the **Editor** (to check for spelling and punctuation); one person will be the **Reader** (to make sure the story makes sense), and one person will be the **Praiser/Encourager** (to make sure everyone's good ideas are recognized and to make sure everyone participates).

Task Sheet
The Factory

1) Each person in the group should be an expert on one of the operations of a machine in The Factory. The group should come up with a design for a product which incorporates each person's machine twice. Once the group has agreed on a product, they should make sure each person in the group knows the sequence of steps to make the product, since the teacher may call on any member of the group to demonstrate the product that the group has chosen.

2) Given a product from another group, the expert on each operation will recommend the correct sequence to duplicate the product. When the group agrees on the sequence, they will test out their ideas and debug them.

One person will be the praiser, one person will be the reporter, one person will be the tester (using paper models), one person will be the keyboarder.

Task Sheet
Crossword Magic

Within your group, agree on a "theme" or topic for your crossword puzzle. For example, an "animals" crossword puzzle would have different animals as the words to be entered as a part of the puzzle, and each clue would relate to one of the animals your group has selected.

One person should be the Recorder. This person's job is to write down the words and clues:

WORDS	CLUES

One person should be the Praiser. This person's job is to make each team member feels appreciated for his/her contribution.

One person should be the Checker. This person's job is to check the spelling of the words and clues generated by the team and to make sure each team member can match each word to its clue.

Each puzzle should have at least 20 words and clues, which you will use in the lab session in the afternoon.

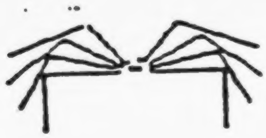
Survival Math Task

Our class has the Hot Dog franchise for all of the high school teams in this area. Our class goal is to make as much money as we can to support our end of the year party.

Each team will make decisions about the Hot Dog Stand at one high school stadium. One person will be the recorder and will use the record sheets; one person will be the Negotiator, to make sure that the whole team agrees with the decisions on amount and quality of items sold; one person will be the Calculator, who will tell the Recorder the amounts that need to be written down; one person will be the Reader, who will read the information on the screen for the team to decide.

Following three games, each team will report the total profit, and we will see how close we are to our class goal. Any person on the team may be called on to report the results, and that person will need to be able to describe the decisions and the results. All teams that turn in accurate worksheets will receive a free homework pass for tonight's math story problems.

EXPERT TOPICS



1. MAKE A SMALLER SPIDER.
2. MAKE 2 SPIDERS STAND NEXT TO EACH OTHER.
3. MAKE A SPIDER STAND UPSIDE DOWN.

```
TO LEFTLES
FD 30
LT 90
FD 30
BK 30
RT 90
BK 30
END
```

```
TO LEFTSIDE
LT 90
REPEAT 4 [LEFTLEG RT 20]
RT 10
END
```

```
TO SPIDER
LEFTSIDE
RIGHTSIDE
FD 10 BK 10
END
```

```
TO RIGHTLEG
FD 30
RT 90
FD 30
BK 30
LT 90
BK 30
END
```

```
TO RIGHTSIDE
RT 90
REPEAT 4 [RIGHTLEG LT 20]
LT 10
END
```

GROUP SKILLS SHEET

	☹	😐	☺
How carefully did we check?			
Did we help each other?			
Did we encourage each other?			
Did we finish our work?			
How well did we teach?			

What was your group good at?

Comments ♪♪ ta da ♫

Group Members Sign

3. Assign students to teams (see Chapter 8).

4. Distribute expert sheets and procedure sheets.

5. Give instructions: "First, you will be teaching the turtle the procedures which make up the spider. You will each have a role--Keyboarder, Checker, and Praiser. Second, you will each become an expert on one of the spider designs on the expert sheet. Decide who will be an expert on which design. Third, you will go to a meeting of experts with the same design as yours. You will be working with that group to decide on the best way to do the design as well as the best way to teach your teammates how to do the design."

6. Set group goal. "Each team that can construct all three of the designs, no matter whom I call on, will get a "Turtle Tutor" button and will have 15 extra minutes of computer time. I will also be observing how well you are working together in both the expert groups and your team groups, and you can earn extra points for your team by doing your job well. Remember, you won't know who I will call on to demonstrate the three designs, and I may call on all of you, so your group is not finished until each of you can do all of the designs."

D. Guided practice

1. Students work in their team to enter the basic spider design. Teacher observes for demonstration of group roles.

2. Students move to their assigned expert group. Teacher moves from group to group assisting with the design and with ideas to teach their team as necessary.

3. Students return to their team. Each student takes a turn demonstrating the design that they completed in the expert group and teaches the other teammates how to make the design. Students practice all three designs.

4. Teacher moves from team to team monitoring group roles. and task mastery.

E. Closure

1. Teacher enters spider procedure with several bugs in it and calls on students to help debug the design.

2 Teacher calls on students to demonstrate the designs, making sure to call on at least one student from each group.

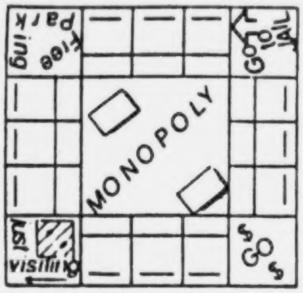
3. Teacher checks to make sure students remember turtle commands and reviews the day's activities.

F. Independent practice

1. Teacher distributes next Logo activity sheet for students to work on to review procedures mastered so far.

2. Teacher goes from group to group to make sure each student can do the three spider designs.

way for students to use existing drill and practice software, whether it is designed for individual or small group use, to combine the power of cooperative learning with the motivation of the microcomputer for an effective learning partnership. A TGT lesson would begin with the same heterogeneous learning teams. The teacher would give a presentation of the concepts to be taught, then demonstrate the drill and practice program to be mastered. Students would practice with their teammates to reach mastery. The next step is the tournament.



A tournament consists of two- to three-person *homogeneous* tournament tables (composed of members from different teams). In an arcade game such as *Spell It!*, each student from a tournament table might play three rounds and compare their number of right and wrong answers to the scores of other tournament table competitors. (With this system, tournament tables with low-achieving students could use different skill parameters than higher-ranked tables.) After the tournament, the people at each table with the highest scores take six points back to their teams, the students scoring second take four points, and the low-scoring students take two. In this way, a learning disabled or low-achieving student could earn as many points for his/her team as a high achiever.

Creating a Cooperative Classroom for Mainstreaming

Teachers who want to try cooperative computer lessons in a mainstream setting should follow these steps:

1) Choose a lesson. Start small, with a simple crossword puzzle, for example.
2) Identify the group goal and/or incentive for working as a group (e.g., all teams who complete the puzzle will get a sticker or certificate).
3) Divide the students into heterogeneous teams, taking into consideration handicap, race, sex, personality, and number of computers. Have each team choose a name.
4) Present the information students will need to do the task, including:
   - Group goal/incentive;
   - Specific behaviors desired (listening, taking turns, encouraging, checking, etc.);
   - Concepts to be mastered; and
   - Directions for the task (expert topics, how to divide up the task, what the finished product should be).
5) Provide time for teams to work together to complete the task.
6) Monitor how well the teams are working together.
7) Ensure individual accountability (e.g., give a quiz and take up one paper per group at random; call on one student per group to demonstrate).
8) Reward teams that complete the task and that work well together.
9) Discuss with students the content and process of the lesson.

Summary

Many teachers ask, "Why are these techniques so effective in producing the results they do with *all* (including mainstreamed) students?" Some of the answers seem to lie in the magic of students teaching each other, the opportunity to be successful, the support and interaction with teammates, and the amount of actual engaged time with the task at hand. Each of the following essential components of cooperative learning contributes to the positive results:

- Heterogeneous teams and team-building experiences prior to beginning curriculum-related task;
- Learning goal featuring positive interdependence;
- Direct teaching of needed social skills;
- Individual accountability; and
- Discussion/processing of observed social skills and/or concerns.

[Dr. Mary Male, School of Education, San Jose State University, One Washington Square, San Jose, CA 95192-0078.]

References

Aronson, E. *The Jigsaw Classroom.* Beverly Hills: Sage, 1978.

Johnson, R. and Johnson, D. *Learning Together and Alone.* Englewood Cliffs: Prentice-Hall, 1974.

Johnson, R. and Johnson, D. *Circles of Learning.* Washington, D.C.: ASCD, 1984.

Johnson, R., Johnson, D., and Stanne, M. "Computer Assisted Instruction: A Comparison of Cooperative, Competitive, and Individualistic Goal Structures." *American Education Research Journal*, 1986, in press.

Johnson, R., Johnson, D., and Stanne, M. "The Effects of Cooperative, Competitive, and Individualistic Goal Structures on Computer-assisted Instruction." *Journal of Educational Psychology*, 1986, in press.

Male, M., Johnson, D, and Johnson, R. *Cooperative Learning and Computers: An Activity Guide for Teachers.* Educational Apple-cations, 194 Wedgewood, Los Gatos, CA, 1986.

Slavin, R. *Using Student Team Learning*: Revised Edition. Baltimore, MD: The Johns Hopkins University, 1980.

Software

Crossword Magic; Grade three through adult; Apple II, 48K. L & S Computerware, 1589 Fraser Dr., Sunnyvale, CA 94087. $49.95.

Spell It!; Grade 5 through Adult; Apple II, Commodore, IBM. Davidson & Associates, 6069 Groveoak Pl. 12, Rancho Palos Verdes, CA 90274. $49.95.

Jigsaw

Logo

A computer language with no ceiling and no floor; appropriate for all ages of students. Students begin to learn programming through graphics with a "turtle." The sophisticated language progresses through the most advanced programming concepts.

Subject Areas: Thinking and problem-solving

Grade level: 3rd and up

I. **Objectives:**

   A. Students will be able to enter Logo commands to make a spider.

   B. Students will be able to teach the turtle a procedure called "spider."

   C. Students will be able to teach the turtle other procedures based on "spider."

II. **Materials needed:** Logo program disk, file disks expert sheet, procedure sheet, Logo reference card (one per team).

III. **Time required:** 1 - 2 hours, depending on age and experience with Logo.

IV. **Procedures**

   A. Preparation

      1. Assemble needed materials.

      2. Make sure you know the basics of Logo (review the reference card) and can make a spider following the commands on the procedure sheet.

   B. Set

      1. Ask how many students think turtles are smart. Ask how many students think they are smarter than a turtle.

      2. Tell students they will be working in teams to teach the turtle to make first a spider, then different versions of spiders. Tell students that teaching the turtle is one way of programming the computer, only it's more fun.

   C. Input

      1. Review the basic turtle commands and editing commands with students as a large group.

      2. Call on students to demonstrate the commands to check for understanding of general Logo vocabulary.

COOPERATIVE LEARNING FOR EFFECTIVE MAINSTREAMING

by Mary Male

Introduction

The benefits and value of using cooperative learning strategies in computer assisted instruction were presented by David W. Johnson and Roger T. Johnson in the October 1985 issue of *The Computing Teacher*. Excitement about cooperative learning and computers is developing among regular and special education teachers as they see these ideas yield benefits in the regular classroom, where students with disabilities are being mainstreamed to achieve instructional and social goals.

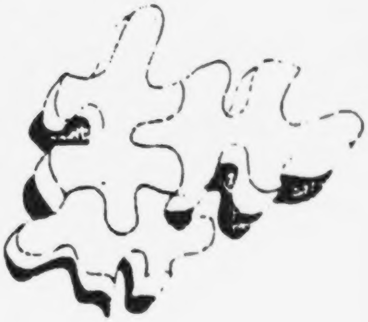
Cooperative learning differs from traditional studies in that success is only possible through group effort and helping each other. In a traditional classroom, students are expected to work primarily on their own, and there is little or no incentive for helping or sharing. Mainstreamed students frequently believe that they will fail no matter how hard they try; they frequently stop trying or become disruptive to hide their fears. If peer tutoring is encouraged in the classroom, tutors are almost always the high achievers, while low achievers become accustomed to being tutored. Cooperative learning promotes shared responsibility for teaching and learning between teacher and students, encourages and rewards helping and sharing, and increases student motivation through interaction and peer support.

In the mainstream classroom, the

teacher faces the difficult task of instructing students who are on a variety of learning levels, and providing an atmosphere of understanding and acceptance of difference and disability. Without careful structure, disabled students can be isolated, working alone on individualized tasks, rather than becoming a part of the instructional and social classroom scene.

To set up cooperative learning in a mainstream classroom, the teacher:

- Assigns students to heterogeneous teams (mainstreamed and low achieving students are spread equally among the teams);
- Sets up positive interdependence within the teams (students sink or swim together through mutual goals, division of labor, role interdependence and group rewards);
- Ensures individual accountability by giving individual quizzes or calling on students at random for demonstration of the target skill (which prevents "hitchhiking," in which one or two students do all the work, but all students get the same grade or reward);



- Teaches the collaborative and social skills needed to be successful; and
- Assists students in debriefing/processing so that they can discuss strengths, problems or changes needed in their group.

In a cooperative learning strategy called "Jigsaw" (Aronson, 1978), for example, the class is divided into four- to six-member heterogeneous teams, one or more of which will contain a mainstreamed student. Each team receives a list of "expert topics," all related to one subject, and each student is responsible for mastering the skills or information pertaining to one topic. An individual quiz or demonstration ensures individual accountability. Individual quiz scores can be added for a team score (the group goal); high scoring teams receive special recognition or other incentive for group performance. Jigsaw gets its name from the division of the academic tasks into pieces, which fit together to give each student on the team a complete picture of the task or skill. Only when each student contributes his/her "piece" (expert topic) can the team be successful (positive interdependence).

Classroom Examples

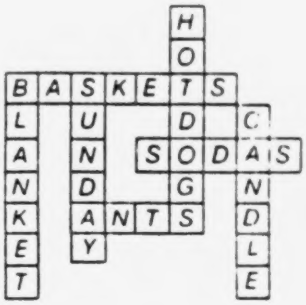
An example of a Jigsaw lesson demonstrates the potential of both cooperative learning and the use of computers to enhance language development for handicapped and non-handicapped students alike. Students are assigned to heterogeneous learning teams, based on past achievement and reading levels, balanced by race and sex. Mainstreamed learning disabled students are also assigned to teams. Each team selects a team name, which is written on the board.

Crossword Puzzles

The lesson is titled "Picnic" and features *Crossword Magic*. Each team is to develop a crossword puzzle with words relating to various aspects of a picnic. Each team member is responsible for participating in the design of the puzzle and also for being able to complete a printed version of the puzzle.

Each person on the team is to be an "expert" on one aspect (e.g., food, sports, equipment). Experts from all of the teams with the same assignment (e.g., food) meet in "expert groups" to brainstorm the words they will contribute to their team and the clues they will use. The teacher meets with each expert group to assist in the brainstorming and wording of clues, and to monitor the group skills used.

Following the expert group meetings, students return to their teams to construct their puzzle. Each team moves to a computer, where *Crossword Magic*'s menu is displayed. Each expert enters the five words they have chosen from the list developed in the expert group. When all the words have been listed by the team members, clues are entered. The completed puzzle is saved on a disk, and the teacher prints out a copy of the puzzle for the team to review as a group.



Team members drill each other on the words and clues, to ensure that all members can successfully complete the puzzle on their own. The teacher next distributes a copy of the puzzle to each individual team member to complete, explaining that only one paper from each team will be collected, but only the teacher knows which one. This assures that team members have a vested interest in seeing that every member of the team can complete the task (individual accountability). The same grade will be given to all team members (group goal).

The teacher prints copies of the puzzles created by each team to share with the whole class and conducts a debriefing/processing discussion of what happened in the groups: What did your teammates do that helped you remember? How did you help someone else? What would you do differently next time? The group discussion reinforces the value the teacher places on successful group operation and the necessary social skills, so important in a mainstream classroom setting.

Playing Games

"Teams-Games-Tournaments" (TGT) (Slavin, 1980) is another cooperative activity to increase basic academic skills and social skills. TGT creates a

Cooperative Learning and Computers: An Activity Guide for Teachers

by Mary Male, Ph.D.
David Johnson, Ph.D.
Roger Johnson, Ed.D.
Mary Anderson

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GALLAUDET UNIVERSITY

Martin R. Noretsky
Gallaudet University
800 Florida Ave NE
Washington, DC 20002

Phone: 202-651-5535

Number of special education students:

Undergraduate: Graduate: 25

Program Description:

Gallaudet University offers a masters degree program in Educational Technology: Special Education/Deafness. The program trains graduate students to become instructional designers, media product development specialists, and educational computing specialists.

EDUCATIONAL TECHNOLOGY: SPECIAL EDUCATION/ DEAFNESS

PROGRAM DESCRIPTION

DEPARTMENT OF EDUCATIONAL TECHNOLOGY
School of Education and Human Services
GALLAUDET UNIVERSITY - WASHINGTON, DC 20002

The Master of Science Program in

EDUCATIONAL TECHNOLOGY: SPECIAL EDUCATION/DEAFNESS

INTRODUCTION

The Department of Educational Technology offers a unique graduate program combining educational technology skills with knowledge of special education and deafness. Special education concepts and basic educational technology skills are emphasized initially; later, students may choose to take advanced courses in any of the four program emphasis areas:

- Educational Computing
- Instructional Design
- Library Media Services
- Media Product Development

The pages that follow will acquaint you with the program more fully. Objectives appear first, specifying skills that are taught and the vocational opportunities. Academic structure follows. This section explains the academic/administrative process beginning with admission on through graduation. Finally the learning experiences, resources, and opportunities available to help you meet your goals are reviewed.

OBJECTIVES

Graduates of this program will be prepared to promote the learning of all students, regardless of the presence of handicap to their learning. Thus, the core curriculum is designed so that graduates of the program will develop the following basic competencies:

1. Identify learner needs and characteristics as a basis for development, selection, or adaptation of instructional materials.
2. Design and implement an instructional segment based on learner needs and characteristics.
3. Select, adapt and produce instructional materials in various media formats to match learner needs and characteristics.
4. Specify characteristics of an effective educational media facility.
5. Utilize formative evaluation methods in instructional materials and media product development.
6. Demonstrate knowledge of issues and practices of special education which relate to the provision of instruction to exceptional learners.
7. Demonstrate knowledge of individualization strategies based on learner variables and learner needs.

During their course of studies students will apply their problem solving and instructional design, media selection, production, and evaluation skills in small-scale class projects.

Graduates, possessing this combination of skills and knowledge, can work as educational computing specialists, instructional designers, library media specialists, media specialists, or TV specialists. They can apply these skills in programs serving deaf and other handicapped learners, as well as in regular educational program or industry.

ACADEMIC STRUCTURE

Admission to the ETSED Program. In addition to the criteria listed for all students in the Gallaudet College Graduate Studies catalog, the Educational Technology Department considers all applicants on the basis of their commitment to special education technology. Criteria such as degrees in education, graduate work in the field, etc. will be considered as additional support to that commitment. Admission to the program does not guarantee acceptance as a degree candidate. Acceptance as a candidate for degree will be determined at the completion of the first 12 semester hours in the program. To be accepted as a candidate, a student must achieve a B (3.0) average for those hours.

Student Classification. Student will be accepted into the master's degree program in ETSED on both part-time degree and full-time degree basis. Special (non-degree) students may take courses in the department without restrictions.

The application deadlines for Graduate Studies, either for the full-time or part-time degree program, are November 15, February 15, and May 1.

Requirements for the Master's Degree. The following are requirements for a MS degree in Educational Technology:

1. The student must have satisfied the candidacy requirements.
2. The student must have completed at least three credit hours of sign communication courses. These courses may be waived if a satisfactory level of proficiency is demonstrated.
3. The student must have completed a minimum of 32 hours of approved coursework or equivalent (normally 15 core course hours, 6 hours of sign communication courses, and at least 11 hours of advanced courses and/or electives) with a B (3.0) average.
4. The student must have completed the comprehensive examination with a passing grade.

Duration of Program. A full-time student, by taking an accelerated pace of coursework, can complete the program in three semesters. Professionals currently working in the field may be eligible for completion of the program in one calendar year, by starting during the summer and completing the program the following spring.

The department plans to implement during the summer of 1988 a summers-only program, making it possible to earn a degree in two or three summers. This program is designed for support personnel (media specialists, educational computing specialists, etc.) and teachers who desire additional training in educational technology or special education.

Certification. Although the ETSED program is accredited by the National Council for Accreditation of Teacher Education (NCATE) students desiring to be eligible for certification in their own state are advised to check its requirements. Assistance will be provided through the department to advise students regarding courses that could help them meet certification requirements.

LEARNING EXPERIENCES

Core and Specializations. The curriculum of the ETSED degree program consists of credit hour requirements in: (1) core courses; (2) advanced courses or practicum (minimum six credit hours); and (3) electives.

The program includes formal courses, personal counseling, the use of independent study resources, and field visitations, both on and off campus. The training program also provides for individual learning contracts, laboratory experiences, and seminars. Each student will work with an advisor to design a program of study that will take into consideration his past work experience and academic training.

Basic Requirements for MS Degree. The following represents the number of credit hour requirements in each area:

15 hours	core courses
6 hours	Sign Communication courses
11 hours	advanced EDT courses, practicum, or electives
32 hours	total

Program of Study. The program of study listed below represents the courses a student in the ETSED program would take in working toward his degree. The first two semesters mostly consist of the core courses, and the third semester the practicum or advanced courses or electives.

First Semester (First Fall Semester)
EDT 701--Learners and Instruction (3)
EDT 704--Introduction to Instructional Media (3)
EDT 706--Introduction to Instructional Design (3)
EDT 709--Introduction to Educational Computing (3) for those in Educational Computing emphasis area.
SIG 723--Simultaneous Communication I (3), or equivalent
(Students may also take electives)

Second Semester (Spring Semester)

EDT 709--Introduction to Educational Computing (3)
EDT 711--Special Education Technology (3)
SIG 724--Simultaneous Communication II (3), or equivalent
(Students may also take electives and/or advanced courses for which they have the required prerequisites or permission)

Third Semester (Second Fall Semester)

Six hours of advanced courses in any of the three emphasis areas in EDT, AND six hours of advanced courses from EDT or electives from any other department, OR
Practicum course in one of the four emphasis areas

Fourth Semester (Second Spring Semester)

Practicum course in one of the four emphasis areas

Summary of Total Credit Hour Requirements for Degree

a. EDT core courses (first and second semester, above).......	15
b. Sign Communications courses (may be waived)..............	6
c. Advanced EDT courses or practicum........................	6
d. Practicum or electives..................................	5
Total minimum credit hour requirement for degree..........	32

Visitation and Practicum Sites. In the Washington area there are several visitation sites that will provide the students the opportunity to observe a wide variety of profession-related activities. In addition to sites on the Gallaudet College campus such as the Model Secondary School for the Deaf, the Kendall Demonstration Elementary School, the Gallaudet College Press, and the College for Continuing Education, local sites include:

> National Captioning Institute, Falls Church, VA
> Learning Technology Institute, Culpeper, VA
> Division of Media Services, US Office of Education
  (a) Captioned Films and Telecommunications Branch
  (b) Learning Resources Branch
  (c) Program Support Branch
> Public Broadcasting System, Washington, DC
> Library of Congress, Washington, DC
> DC Public Library, Washington, DC
> Learning Resource Centers in Metropolitan Area Public Schools
> Ed Tech Programs at Howard and Catholic Universities

Additionally, there are over 20 potential practicum sites, both on and off campus, that are available to students in the ETSED program. They include residential, day, and public school programs.

FACULTY

The Department of Educational Technology comprises four full-time and two part-time faculty, all of whom hold doctorates. They possess wide range of diverse backgrounds, as indicated by the sketches, which follow later.

All faculty have the necessary credentials to teach courses in the graduate program and are also available to advise students, supervise the practicum experiences, and develop and evaluate courses and the program itself.

EPSTEIN, KENNETH I., Associate Professor (Part Time)
BA, Johns Hopkins University
MS, PhD, Florida State University

NOMELAND, RONALD E., Professor and Department Chair
BS, Gallaudet College
MEd, University of Maryland
MA, California State University, Northridge
PhD, Syracuse University

NORETSKY, MARTIN, Associate Professor
BA, University of Miami
MA, Gallaudet College
PhD, University of Maryland

OLIA, FATEMEH, Assistant Professor
BS, Nebraska Wesleyan University
MA, University of Nebraska, Lincoln
PhD, University of Oklahoma

ROBBINS, CURTIS, Assistant Professor
BA, Gallaudet University
MA, New York University
MA, University of Maryland
Ph.D., University of Maryland

TORR, DONALD, Professor (Part Time)
AB, MA, PhD, Washington University

INDIVIDUAL COURSE OFFERINGS

The following page lists typical sequence of courses for each of the four emphasis areas in the ETSED program. Each course is completely described on the following pages.

THE FULL COURSE SEQUENCE FOR EACH OF THE FOUR EMPHASIS AREAS

EDUCATIONAL COMPUTING EMPHASIS

FIRST SEMESTER (Fall)			Prerequisite
701•	Learners and Instruction	3	
704•	Intro to Instructional Media	3	
706•	Intro to Instructional Design	3	
709•	Intro to Educational Computing	3	
SIG	Sign Communication Course	3	

SECOND SEMESTER (Spring)			
711•	Special Education Technology	3	EDT 701 or PI
735	Logo in the Classroom	3	
736	Education Software Application	3	EDT 709 or PI
SIG	Sign Communication Courses	3	

THIRD SEMESTER (Fall)			
737	Design of Instruction Software	3	EDT 706 & 709
738	Development of Computer Center	3	EDT 709 or PI

FOURTH SEMESTER (Spring)			
784	Practicum in Educatnl Computng	1-6	Perm of Inst

LIBRARY MEDIA SERVICES EMPHASIS

FIRST SEMESTER (Fall)			Prerequisite
701•	Learners and Instruction	3	
704•	Intro to Instructional Media	3	
706•	Intro to Instructional Design	3	
SIG	Sign Communication Course	3	

SECOND SEMESTER (Spring)			
709•	Intro to Educational Computing	3	
711•	Special Education Technology	3	EDT 701 or PI
722	Financial Aspcts-Media Prodctn	1	EDT 704 or PI
724	Acquisition/Catalog Materials	3	
SIG	Sign Communication Courses	3	

THIRD SEMESTER (Fall)			
721	Media Facility Serv/Evaluation	3	
730	Media Facility Plan & Budget	2	Perm of Inst
733	Media Facility Staff/Pers Mgt	2	Perm of Inst

FOURTH SEMESTER (Spring)			
781	Practicum Media Management	1-6	Perm of Inst

INSTRUCTIONAL DESIGN EMPHASIS

FIRST SEMESTER (Fall)			Prerequisite
701•	Learners and Instruction	3	
704•	Intro to Instructional Media	3	
706•	Intro to Instructional Design	3	
SIG	Sign Communication Course	3	

SECOND SEMESTER (Spring)			
709•	Intro to Educational Computing	3	
711•	Special Education Technology	3	EDT 701 or PI
716	Instructional Materials Evaltn	2	EDT 706 or PI
761	Instructional Theory	2	Perm of Inst
763	Instructional Systems Design	3	EDT 706 or PI
SIG	Sign Communication Courses	3	

THIRD SEMESTER (Fall)			
718	Instructnl Systems Analysis	3	EDT 704 & 716
770	Instructional Project Mgt	1	Perm of Inst
779	Clinical Instructional Design	2	Perm of Inst

FOURTH SEMESTER (Spring)			
783	Practicum in Instructnl Design	1-6	Perm of Inst

MEDIA PRODUCT DEVELOPMENT EMPHASIS

FIRST SEMESTER (Fall)			Prerequisite
701•	Learners and Instruction	3	
704•	Intro to Instructional Media	3	
706•	Intro to Instructional Design	3	
SIG	Sign Communication Course	3	

SECOND SEMESTER (Spring)			
709•	Intro to Educational Computing	3	
711•	Special Education Technology	3	EDT 701 or PI
722	Financial Aspcts-Media Prodctn	1	EDT 704 or PI
714	Basic TV and Photography	3	EDT 704 or PI
741	Graphics Production	2	Perm of Inst
SIG	Sign Communication Courses	3	

THIRD SEMESTER (Fall)			
750	TV Production Methods	3	EDT 714 or PI
745	Mediated Materials Production	2	EDT 741 or PI

FOURTH SEMESTER (Spring)			
782	Practicum Media Product Dvlpmt	1-6	Perm of Inst

Revised June 1987

ETSEC PROGRAM COURSE DESCRIPTIONS

NOTE: Inasmuch as there have been some revisions and additions since the Graduate Student [illegible] was printed, the list below represents up to date descriptions of courses offered by the Department of Educational Technology.

EDT 701 Learners and Instruction (3)
Orientation toward the utilization of learner characteristics as a basis for the provision of appropriate instructional experiences and materials for individual learners and learner groups, including those with exceptionalities. Approaches learner needs from an educational technology perspective.

EDT 704 Introduction to Instructional Media (3)
Introduction to media in the instructional context. Development of awareness of media options and competence in the selection of appropriate media. Overview of media facilities and delivery systems. Definition of the media manager and media product developer roles and skill development in simple classroom media production and use. A $10 materials fee is required.

EDT 706 Introduction to Instructional Design (3)
Essentials of a systems approach to instructional design. Combines overview of the approach with practical application of instructional design principles in a small scale project.

EDT 709 Introduction to Educational Computing (3)
This course will provide a working knowledge of computer terminology, history, and social and moral issues; elementary programming skills; and skills necessary to use existing software. A $10 materials fee is required.

EDT 710 Seminar in Educational Technology (1)
State-of-the-art examination of the field of educational technology. Analysis and discussion of current and future implications of educational technology for advances in instruction and learning. Prerequisite: Permission of instructor.

EDT 711 Special Educational Technology (3)
Orientation toward special education and the application of educational technology to the instructional needs of exceptional children. Prerequisite: EDT 701.

EDT 714 Basic TV and Photography (3)
Theory, development and application of practical skills in one-camera instructional television production and 35mm photography. Two-hour lecture and two-hour laboratory. Prerequisite: EDT 704 or permission of instructor.

EDT 716 Instuctional Materials Evaluation (2)
Essentials of formative evaluation and revision of instructional materials or media. Emphasis is placed on techniques for assessing and improving the instructional effectiveness of materials. Involves planning, conducting and interpreting the results of a formative evaluation of small-scale prototypic instruction. Prerequisite: EDT 706 or permission of instructor.

EDT 718 Instructional Systems Analysis (3)
The application of a systems approach to the solving of instructional problems includes adapting instructional materials, media, facilities or programs to specific learner handicaps and to individual learner needs. Prerequisites: EDT 704 and 716 or permission of instructor.

EDT 721 Media Facility Services and Evaluation (3)
Development of the skills necessary for providing media facility services which meet the needs of the teachers and students and maximizing the effectiveness of these services through joint planning and implementation. Also, adaptation of media facility services and resources to students with special needs.

EDT 722 Financial Aspects of Media Production (1)

This course is designed to provide the media manager and the media producer with the concepts and tools by which they can accurately estimate the cost and cost-effectiveness of a given media project or effort, using personnel, involvement times materials information and overhead costs. Prerequisite: EDT 704 or permission of instructor.

EDT 724 Acquisition and Cataloging of Materials (3)

Provides an overview of acquisition procedures and the basic principles of descriptive cataloging and classification of materials. A laboratory period will provide hands-on experience in cataloging and acquisition.

EDT 730 Media Facility Planning and Budgeting (2)

Essentials of goal setting, equipment selection, budget planning and implementation, space utilization and report writing for the manager of a school media center. Prerequisite: Permission of instructor.

EDT 733 Media Facility Staffing and Personnel Management (2)

Defines the role of the media manager in the instructional context and prepares that person to build and maintain a support staff which facilitates the efficient performance of that role. Prerequisite: Permission of instructor.

EDT 735 Logo in the Classroom (3)

This class is designed for educators to learn the computer language Logo and explore how they can use it in their classrooms. Logo is a good first programming language for children and at the same time has been praised as a means of teaching problem solving and procedural thinking skills for students of all ages.

EDT 736 Educational Software Applications (3)

This course is designed to examine the use of computer software for its applications in educational settings. The foci will be (1) the acquisition of computer skills in using professional productivity software, (2) the application of these software in educational settings, and (3) the evaluation and application of educational courseware. Prerequisites: EDT 706 and 709 or permission of instructor.

EDT 737 Design and Production of Instructional Software (3)

The course focuses on the design and production of instructional software following a team-based systems approach. The planning and design of instruction, the use of authoring or appropriate programming languages, and the evaluation and field testing of the product complete the process of software development. Prerequisites: EDT 706 and EDT 709, or permission of instructor.

EDT 738 Development & Administration of a Microcomputer Users Center (3)

This course is an introduction to a microcomputer users center and the development of skills in organizing and maintaining such a facility. Technical skills will include instruction in the use of microcomputers and other equipment to teach professional and support personnel computer skills. Design skills will include the organization of courses and evaluation of results. Administrative skills will focus on the relationship between the microcomputer users center and the environment it is designed to support. Prerequisites: EDT 709 or permission of instructor.

EDT 741 Graphics Production (2)

This course is designed to provide the student with a knowledge of and skills in the production of graphic materials for use in printed texts and materials, television production and as visual display materials. Emphasis is on understanding the correct proportions for materials that are to be used in print, television and for display, legibility standards for lettering, basic layout and paste-up procedures and the effective use of photographs and art for illustrative purposes. Prerequisite: Permission of instructor.

EDT 745 Mediated Materials Production (2)

The student will design instruction, write scripts and production specifications for the audio recorded, filmstrip and slide-tape formats. Production of a five-minute segment of instruction will follow in either the filmstrip or the slide-tape format. Prerequisite: EDT 741 or permission of instructor.

EDT 750 TV Production Methods (3)

The course is designed to give the student practical, hands-on experience in the essential aspects of television production, from the creation of the script through to final edited videotaped product. Prerequisite: EDT 714 or permission of instructor.

EDT 761 Instructional Theory (2)

Instructional theory provides the student with a framework for instructional design within the larger scope of learning theory, as well as a rationale for designing effective instructional materials. Prerequisite: Permission of instructor.

EDT 763 Instructional Systems Design (3)

Analysis and implementation of the systems approach to the complete process of instructional design. Applies advanced design principles to a small-scale instructional design project. Prerequisite: EDT 706 or permission of instructor.

EDT 770 Instructional Project Management (1)

Essentials of developing a management system for instructional design projects. Prerequisite: Permission of instructor.

EDT 779 Clinical Instructional Design (2)

Discusses the basic concepts of consulting with clients and change-agent behaviors through simulated instructional project situations. Prerequisite: Permission of instructor.

EDT 781 Practicum in Media Management (1-6)

Supervised professional training in the specialized area of Media Management in an educational setting approved by the faculty of the Department of Library and Information Studies and the chair of the Department of Educational Technology. Minimum of ten weeks (at least 300 clock hours) including a written and/or project report for six credit hours. Prerequisites: Admission into the Educational Technology program and permission of instructor.

EDT 782 Practicum in Media Product Development (1-6)

Supervised professional training in the specialized area of Media Product Development in an educational setting approved by the faculty of the Department of Educational Technology. Minimum of ten weeks (at least 300 clock hours) including a written and/or project report for six credit hours. Prerequisite: Admission into the Educational Technology program and permission of instructor.

EDT 783 Practicum in Instructional Design (1-6)

Supervised professional training in the specialized area of Instructional Design in an educational setting approved by the faculty of the Department of Educational Technology. Minimum of ten weeks (at least 300 clock hours) including a written and/or project report for six credit hours. Prerequisite: Admission into the Educational Technology program and permission of instructor.

EDT 784 Practicum in Educational Computing (1-6)

Supervised professional training in Educational Computing emphasis area. To be conducted in an educational setting approved by the faculty of the Department of Educational Technology. Minimum of ten weeks (at least 300 clock hours) including a written and/or project report for six credits. Prerequisite: Admission into the Educational Technology program and permission of instructor.

EDT 785 Educational Technology Lab (1-2)

Practical work experience in carrying out production or operational tasks related to one of the following areas: information storage, retrieval and service; printing; photography; graphics; television; computer processing; or intructional materials design and evaluation. Prerequisite: Permission of instructor.

EDT 799 Independent Study (1-3)

Provides the opportunity for more concentrated study of particular topics than can be provided in regular classes. End product and the number of credits to be given must be mutually agreed to by student and teacher prior to registration. Prerequisite: Admission to the program or permission of department chair.

NORTHEASTERN ILLINOIS UNIVERSITY

Janet Lerner
Northeastern Illinois University
823 Ingleside Place
Evanston, IL 60201

Phone: 312-583-4050

SpecialNet: ILNEI.SE

Number of special education students:

Undergraduate: 200   Graduate: 400

Program Description:

NIU offers one regular elective course and three special courses on technology. Dr. Lerner also presents sessions in other courses, particularly in Early Childhood Special Education.

Syllabus

SPED 395: Microcomputers in Special Education

Purpose It is the purpose of this course to prepare special educators to utilize the microcomputer as a pedological and management tool in their classrooms. Upon completion of this course the student will be knowledgeable in the uses of the microcomputer as a tool for instruction (drill and practice, tutorial, simulation and educational game software for special education); as a tool for the teacher (lesson authoring systems, IEP writing, administrative programs); as a practical tool (word processing) and as a creative tool (Logo and Basic). Emphasis is on special education applications.

Outline

1. Overview of the microcomputer itself : how to use it - hardware, keyboard, monitor, printer, disk drives periferals (Koala Pad).
2. Overview of commercial software for special educators : drill and practice, tutorials, simulations, demonstrations of selected commercial software.
3. The Koala Pad and other peripherals : Demonstration and discussion of applications, special peripherals for the handicapped.
4. Programming: Logo and Basic : Demonstrations and projects related to area that handicapped students are majoring in.
5. Word processing : Demonstration of uses of word processing as a practical, creative and instructional tool - tryout.
6. Lesson Authoring Systems : Overview. Superpilot demonstration and project related to area of special education studied or to pupils taught by students.
7. Management and administrative use : Review of management and monitoring systems.

Bibliography

Hagen, D. Microcomputer Resource Books for Special Education . Reston Publishing, 1984, Virginia.

Budolf, M, Thormann, J. and Gras, A. Microcomputers in Special Education: An Introduction to Instructional Applications Brookline, 1984, Cambridge.

Behrmann, M. Handbook of microcomputers in Special Education , 1984, U.S.A.

Bennet, R.E., Applications of microcomputer technology to special education. Exceptional Children . 1982, 49, 106-113.

Browning, P. and Nove, G. Computer technology for the handicapped: a literature profile. The Computing Teacher . 1983, 10(6), 56-59.

Northeastern Illinois University
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Chicago, IL 60625
Dr. Jeffrey Messerer

COMPUPLAY A division of the National Lekotek Center
2100 Ridge Avenue
Evanston, Illinois 60204
312/328-0001

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COMPUPLAY SM

Enhance your skills and techniques by attending the COMPUPLAY training course—a computer training program for professionals working with children with special needs.

The development of the Compuplay training course was made possible by a grant from the Quaker Oats Foundation.

COMPUPLAY

A computer play and resource center for children with special needs, parents and professionals.

COMPUPLAY is a unique model program that involves children with special needs, their parents, and computer play Staff members are professionals in special education or related fields who have completed the COMPUPLAY training course

Through the use of adaptive equipment and quality software, children with special needs are able to create, explore, make decisions, play, and learn using the computer COMPUPLAY stresses the child's existing capabilities so that interaction with the computer is a positive and highly motivating experience

COMPUPLAY classes for parents and children are offered periodically throughout the year The sessions include informal assessment, parent training, direct instruction, and time for the parent and child to play independently on the computer COMPUPLAY offers a drop in center and software lending library to parents involved in the program

COMPUPLAY provides inservice training to professionals in local school districts on computer use for children with special needs

COMPUPLAY℠

A division of the National Lekotek Center

2100 Ridge Avenue, Evanston, Illinois 60204 (312)328-0001

COMPUPLAY TRAINING COURSE OUTLINE

DAY ONE:

9:00-9:15	OVERVIEW OF COURSE
9:15-10:00	DISCUSSION: HARDWARE/PERIPHERALS/SOFTWARE
10:00-10:15	BREAK
10:15-12:00	HANDS-ON FAMILIARIZATION WITH BASIC EQUIPMENT
12:00-1:00	LUNCH
1:00-1:30	HANDS-ON INSTRUCTION ON UTILIZATION OF PRODOS
1:30-2:30	DEMONSTRATION / DISCUSSION ADAPTIVE EQUIPMENT
2:30-3:30	HANDS-ON ADAPTIVE EQUIPMENT
3:30-3:45	BREAK
3:45-5:00	HANDS-ON TROUBLE SHOOTING THE APPLE COMPUTER QUESTION AND ANSWER SESSION.

Compuplay Program Director
Mary Trieschmann, M.S.Ed.
Lekotek
2100 Ridge Avenue
Evanston, IL 60204

A computer play and resource center for parents
and children with special needs

DAY 2:

9:00-10:00	DISCUSSION COMPUPLAY
10:00-10:15	BREAK
10:15-12:00	DEMONSTRATION / DISCUSSION HARDWARE /SOFTWARE METHODS
12:00-1:00	LUNCH
1:00-2:00	COMPUPLAY METHODS
2:00-2:15	BREAK
2:15-3:30	VIEW VIDEO TAPES OF CHILDREN / DISCUSSION
3:30-4:15	SOFTWARE SELECTION / EVALUATION
4:15-5:00	PARTICIPANTS CREATE INDIVIDUAL METHODS FOR SPECIFIC CHILDREN

DAY 3:

9:00-10:30	PARTICIPANTS PRESENT METHODS
10:30-10:45	BREAK
10:45-12:00	PROGRAMMING UNICORN BOARD AND HANDS ON SOFTWARE MANIPULATION
12:00-1:00	LUNCH
1:00-2:15	PROGRAMMING UNICORN BOARD AND HANDS ON SOFTWARE MANIPULATION
2:15-2:30	BREAK
2:30-4:00	DISCUSSION OF COMPUPLAY PROGRAM CONSIDERATIONS AND FUNCTIONS
4:00-4:30	TRACE CENTER VIDEO TAPE
4:30-5:00	WRAP-UP / QUESTION AND ANSWER SESSION

UNIVERSITY OF ILLINOIS AT CHICAGO

Cindy Okolo
University of Illinois at Chicago
College of Education Box 4348 M/C 147
Chicago, IL 60680

Phone: 312-996-8138

SpecialNet: ILUICSPED

Number of special education students:

Undergraduate: Graduate: 120

Program Description:

The University of Illinois at Chicago will offer their first course in special education technology this summer.

SpEd 348, Microcomputers in Special Education

Summer, 1987

Instructor: Dr. Cindy Okolo, 3549 ECB, 996-8138 or 996-9650

Text: Lindsey, J. D. (1987). Computers and exceptional individuals. Columbus, OH: Merrill Publishing Company.

Goals and objectives of the course: The primary goal of this course is to expose participants to applications of microcomputer-based technology that are relevant for special education teachers and students. Although applications for more severely handicapped students will be discussed, the course will focus on microcomputer applications for mildly to moderately handicapped students. At the conclusion of this course, each participant should be able to:

1. Define the concept of telecommunications and describe the SpecialNet system.

2. Briefly describe the characteristics of five generations of computers.

3. Discuss trends in current uses of special education technology.

4. Define how microcomputers can be used in special education as: (a) teaching tools, (b) teacher tools, and (c) orthotic/prosthetic devices.

5. Describe both motivational and pedagogical features of effective computer-assisted instruction (CAI).

6. Define common terms associated with microcomputer use (list attached to back page of syllabus).

7. Perform common functions related to the use of a microcomputer, including: (a) boot a computer, (b) format a disk, (c) copy a disk/file, (d) print a file, and (e) access a database.

8. Evaluate software for use in his/her classroom.

9. Create and print at least one paragraph with a word-processing program.

10. Develop products for use in classroom instruction with teacher-tool software.

11. Develop a unit plan that integrates at least two pieces of computer software into the classroom curriculum.

12. Discuss recent research regarding the efficacy and feasiblity of using CAI, CMI, word processing, speech synthesis, and adaptive/assistive devices.

Grades: Points will be awarded for class activities as follows:

Activity	Points
Software evaluation (lab)	50
Word-processing project (lab)	50
CAI-integration project (lab)	100
other lab projects of choice	100
Mid-term exam	50
Final exam (not cumulative)	50
Quiz on computer terms	40
Class participation	10
TOTAL	450

You may complete additional lab projects for "extra-credit" points. Grades will be awarded as follows:

405 to 450 or more points — A
360 to 404 points -- B
315 to 359 points -- C
314 to 270 points -- D
269 points and below -- E

SpEd 348—Syllabus

DATE	TOPICS	READINGS*
6/30	Introduction to course Telecommunications and SpecialNet	Chap. 1
7/2	History of computers Current trends in special ed computer use Computer-assisted instruction (CAI)	Appendix B Chap 3
7/7	CAI--continued Other special ed applications	Chap 4
7/9	Hardware	Chap 2
7/14	Software evaluation - LAB Personal microcomputer-use plans	Chap 13 Appendix G
7/16	MIDTERM EXAM	
7/21	Speech output Word processing	Chap 5
7/23	LAB	
7/28	Integration of computer-based activities Adaptive and assistive devices	Chap 6 Chap 7
7/30	LAB	
8/4	Computer-managed instruction Other teacher tools	Chap 12
8/6	FINAL EXAM LAB—SOFTWARE EVALUATION	

*Other readings may be assigned at the instructor's discretion.

UNIVERSITY OF KENTUCKY

A. Edward Blackhurst
229 Taylor Education Building
University of Kentucky
Lexington, KY 40506

Phone: 606-257-4713

SpecialNet: UKYSPED

Number of special education students:

Undergraduate: 260   Graduate: 400

Program Description:

UK offers a Special Education Microcomputer Specialist Program and a Post-Doctoral Fellowship Program. The specialist program consists of 38 credits of coursework, practicum, and research in technology. The post-doctoral program is based on an Individualized Fellowship Plan.

STUDY MICROCOMPUTER TECHNOLOGY
IN
SPECIAL EDUCATION
AT
THE UNIVERSITY OF KENTUCKY

The Department of Special Education at the University of Kentucky announces a Post-Master's Degree program in special education microcomputer technology. This is a full-time, twelve month program of studies blending didactic instruction, practicum, and research related to the use of microcomputers in special education programs. Students can earn the Educational Specialist Degree (Ed. S.) or use the program as the first year of study toward the Doctor of Education Degree (Ed. D.). Financial support is available in the form of Graduate Assistantships.

THE COURSES ----------------------

Courses are designed to develop competencies in the use of microcomputers for instruction, management, information processing, computer programming, computer assisted instruction, and evaluation of special education programs. Students also develop consultation and training skills related to microcomputer use in special education programs. A research project on microcomputer use in special education is required. The competencies and skills developed in the program are listed on the attached pages. A brief description of the courses taken each semester is on the last page of this announcement.

THE PRACTICUM ------------------

During the Fall and Spring semesters, four hours of weekly practicum are required in public school special education settings in which microcomputers are being used. The microcomputing research project is conducted during the Spring Intersession practicum. The Summer practicum involves teaching microcomputer workshops for special education teachers and consulting with them about their microcomputing needs.

THE ASSISTANTSHIP --------------

Financial support is available in the form of Graduate Assistantships made possible by a grant from the Division of Personnel Preparation, Office of Special Education Programs, U. S. Department of Education. Graduate Assistantships require 14 hours of work each week. Each Assistant rotates through 5 eight-week blocks: supervision of a microcomputer laboratory, software evaluation, database management, programming computer assistant instruction lessons, and microcomputing support services. Ed. S. students are paid a stipend of $6,600; Ed. D. students receive $7,200. All tuition is paid: and students receive approximately $700 worth of computer software to take with them upon completion of the program.

THE ADMISSION REQUIREMENTS ----

A Master's Degree in any area of Special Education; A score of 900 on the combined verbal and quantitative portions of the Graduate Record Examination for the Ed. S. and 1,000 for the Ed. D.; 2.5 undergraduate GPA; 3.4 graduate GPA; two years of teaching experience with exceptional children; four letters of reference; an interview with faculty. Previous experience with microcomputers is not necessary.

THE APPLICATION FORMS ----------

Students must make application to the University of Kentucky Graduate School and to the Department of Special Education. To obtain application forms or additional information, contact:

Dr. A. Edward Blackhurst
Director of Graduate Studies
Department of Special Education
229 Taylor Education Building
University of Kentucky
Lexington, KY 40506
Telephone: (606) 257-4713
SpecialNet User Name: UKYSPED

THE UNIVERSITY OF KENTUCKY
SPECIAL EDUCATION MICROCOMPUTER SPECIALIST PROGRAM CURRICULUM

This program is completing its third year. For full-time students, it is a twelve-month program of studies leading to the Educational Specialist (Ed. S.) degree. In addition to the formal curriculum, there are five eight-week blocks of structured activities which involve ten hours per week supervising a microcomputer lab, evaluating software, using data bases, providing microcomputing support services, and developing computer assisted instruction programs. The formal curriculum is as follows:

Course — Credits

Fall Semester

EDS 558 Problems in Special Education: Using Microcomputers — 3
An overview of applications of microcomputers in special education programs. (Fleming)

EDS 779 Seminar in Special Education: Microcomputer Information Systems — 3
Using an integrated word processing program, data base management system, and electronic spreadsheet for special education applications. Telecommunications in special education are also studied. (Blackhurst)

EDS 779 Seminar in Special Education: Developing Computer Assisted Instruction — 3
Principles of designing computer assisted instruction programs in special education are studied. Students also use authoring system shell programs to design CAI programs. (Bott)

EDS 558 Problems in Special Education: Using BASIC — 3
Programming with the BASIC language is studied, with specific applications in special education. (Shuping)

EDS 612 Advanced Practicum in Special Education — 1
A four hour per week practicum in applications of microcomputers in public school special education programs. (Fleming)

Spring Semester

EDS 558 Problems in Special Education: Implementing Microcomputer Programs in Schools — 3
Procedures for designing microcomputer systems in schools. Emphasis is on selecting hardware and software and developing operational plans and systems. Different microcomputer systems and troubleshooting are also studied. (Fleming)

EDS 558 Problems in Special Education: Asssistive and Adaptive Devices 3

Study of equipment and procedures to enable students with physical disabilities or sensory impairments to access microcomputers and use microcomputers for communication and environmental control. (Shuping)

EDS 779 Seminar in Special Education: Using SuperPILOT 3

The "Apple SuperPILOT" computer assisted authoring language is used to develop CAI programs suitable for use in special education. (Blackhurst)

EDS 799 Research Techniques in Special Education 3

Students design a special education microcomputer research project. (Blackhurst)

EDS 612 Advanced Practicum in Special Education 1

A four hour per week practicum in applications of microcomputers in public school special education programs. (Fleming)

Intersession

EDS 558 Problems in Special Education: Using LOGO 3

The LOGO programming language and its use in special education currricula are studied. (Shuping)

Summer Session

EDS 779 Seminar in Special Education: Advanced Topics in Microcomputing 3

A topical seminar on topics of current interest related to microcomputer use in special education. (Blackhurst)

EDS 789 Independent Study in Special Education 3

Completion of a microcomputing research project. (Blackhurst)

EDS 731 Practicum in Special Education Personnel Preparation 3

Students team teach a special education microcomputer course under supervision. (Fleming)

TOTAL CREDITS 38

FUNCTIONS, COMPETENCIES, AND TASKS DEVELOPED IN THE UNIVERSITY OF KENTUCKY SPECIAL EDUCATION MICROCOMPUTER SPECIALIST PROGRAM

A. Edward Blackhurst
Department of Special Education
University of Kentucky
1986

Following is the list of functions, competencies, and tasks that are developed in the Special Education Microcomputer Specialist Program at the University of Kentucky. The list is used to evaluate prior knowledge and competence at the beginning of the program. Students use it as a checklist to monitor progress throughout the program. The list will be revised as a result of experience with the curriculum.

FUNCTION 1.0 MICROCOMPUTER OPERATION

COMPETENCY 1.1 Assemble and operate the components of a microcomputer system in a special education environment.

TASKS

1.1.1 Define the components necessary for the operation of different microcomputer system configurations.

1.1.2 Connect input and output devices such as disk drives, printers, monitors, speech synthesizers, graphics tablests, and others.

1.1.3 Install and test the operation of simple hardware add-ons that can increase the functioning scope of the microcomputer, such as clock cards, additional memory, CP/M operating system, RGB interfaces, and others.

1.1.4 Explain operations that could cause hardware damage if not performed in an appropriate manner.

COMPETENCY 1.2 Illustrate the use of various microcomputer system commands and utility programs.

TASKS

1.2.1 Initialize diskettes in preparation for using them to store information.

1.2.2 Make back-up copies of system masters in one and two-drive computer systems.

1.2.3 Prepare a "Hello Program".

1.2.4 Boot, load, list, edit, run, and save programs.

1.2.5 Access the catalog of files on a disk.

1.2.6 Lock and unlock files.

1.2.7 Explain the disk operating system.

1.2.8 Access a file copy program, transferring one file at a time from the first to second disk drive.

1.2.9 Identify the procedural differences in using different types of files, such as text, binary, integer BASIC, and others.

COMPETENCY 1.3 Demonstrate the appropriate maintenance of a microcomputer system.

TASKS

1.3.1 State the environmental conditions under which microcomputers operate most efficiently.

1.3.2 Demonstrate the proper care of microcomputer disks and describe the effects that dust, magnetic fields, temperature, liquids, and physical abuse can have on them.

1.3.3 Secure back-up copies of software purchased and make frequent up-to-date copies of sofware files under construction or revision.

1.3.4 Describe the effects of asynchronous disk drive speed on the operation of the computer system.

COMPETENCY 1.4 Use simple diagnostics to determine problems that may exist when a microcomputer or software program fails to operate properly.

TASKS

1.4.1 Conduct a "kernal check".

1.4.2 If a microcomputer malfunctions, determine whether the problem exists in the disk, disk drive, drive controller card, or elsewhere in the computer.

1.4.3 If a problem exists within a disk, demonstrate strategies for attempting to recover information.

FUNCTION 2.0 MICROCOMPUTER APPLICATIONS

COMPETENCY 2.1 Describe the impact of microcomputers and related technologies on special education programs.

TASKS

2.1.1 Explain the historical development of technology in special education.

2.1.2 Differentiate between systems and media technology.

2.1.3 Describe uses of microcomputers in special education programs.

2.1.4 Explain the use of devices for interfacing students with subject matter.

2.1.5 Explain ways that telecommunications can be used in special education.

COMPETENCY 2.2 Use microcomputers to facilitate the education of students with learning and behavior disorders.

TASKS

2.2.1 Use drill and practice programs appropriately.

2.2.2 Identify and use appropriate tutorial programs.

2.2.3 Incorporate simulation and problem solving programs into the curriculum.

2.2.4 Select educational games to reinforce learning.

2.2.5 Use educational and vocational assessment programs.

2.2.6 Use computers and related software for reinforcement.

COMPETENCY 2.3 Use microcomputers to compensate for learning barriers that are due to visual impairments, communication disorders, and physical disabilities.

TASKS

2.3.1 Use hardware and software large-type generators.

2.3.2 Install and operate speech synthesizers.

2.3.3 Use braille keyboards and printers.

2.3.4 Operate voice-activated input systems.

2.3.5 Use adapted software and hardware that permits simplified operation of the computer.

2.3.6 Install and operate microswitch activation systems.

2.3.7 Use electronic communication boards.

COMPETENCY 2.4 Explain ways that microcomputers can be used to respond to the unique learning characteristics of children who are gifted and talented.

TASKS

2.4.1 Use graphics tablets and graphics generation programs.

2.4.2 Install and use music synthesizers.

2.4.3 Teach computer programming.

2.4.4 Use the microcomputer in creative writing programs.

2.4.5 Use microcomputer software to facilitate acceleration.

2.4.6 Incorporate advanced problem solving, gaming, and simulation software in the curriculum.

COMPETENCY 2.5 Use the microcomputer to generate teaching aids.

TASKS

2.5.1 Generate tests.

2.5.2 Design and operate information storage and retrieval systems.

2.5.3 Produce transparency masters.

2.5.4 Use instructional shell programs.

2.5.5 Generate worksheets.

2.5.6 Use data analysis programs.

2.5.7 Use gradebook programs.

2.5.8 Develop individualized education programs (IEP's) using the microcomputer.

COMPETENCY 2.6 Develop a plan for microcomputer use in a special education program.

TASKS

2.6.1 Identify elements of the special education curriculum for which microcomputer use is appropriate.

2.6.2 Develop procedures for evaluating and selecting microcomputer software and hardware for use in the special education curriculum.

2.6.3 Develop a budget for microcomputer operation.

2.6.4 Determine the physical plant requirements for different configurations of microcomputer programs and equipment.

2.6.5 Prepare guidelines for microcomputer use in special education programs.

2.6.6 Maintain files of sources for microcomputer hardware and software.

FUNCTION 3.0 DESIGNING COMPUTER ASSISTED INSTRUCTION PROGRAMS

COMPETENCY 3.1 Identify features of computer programs that can affect their usefulness with exceptional children.

TASKS

3.1.1 Determine readability level of programs.

3.1.2 Describe the potential effects of pictures and nonstandard characters on understanding.

3.1.3 Explain the effects of program format on understanding.

3.1.4 Describe how user control of rate and sequence of presentation can impact on program effectiveness.

3.1.5 Explain how sound can be used in programs and its positive and negative effects.

3.1.6 Illustrate how computers and programs can be accessed by alternative input/output devices.

3.1.7 Explain the importance of user accessibility to the programming code of instructional software.

3.1.8 Describe the importance of being able to interrupt and resume programs.

3.1.9 List the features of good-quality program documentaion and support materials.

3.1.10 Explain the importance of the type and frequency of reinforcement in instructional software.

COMPETENCY 3.2 Develop specifications for a computer assisted instruction lesson appropriate for an exceptional learner.

TASKS 3.2.1 Define lesson objectives.

3.2.2 Develop evaluation criteria and procedures.

3.2.3 Develop general content outline.

3.2.4 Design presentation treatment.

3.2.5 Develop an instructional outline.

3.2.6 Determine program branches.

3.2.7 Design screen displays.

3.2.8 Design special effects.

3.2.9 Develop support materials.

COMPETENCY 3.3 Use an authoring system to develop a computer lesson for an exceptional learner.

TASKS 3.3.1 Select an authoring system that is appropriate for the student's instructional objectives.

3.3.2 Enter information according to the requirements of the authoring system.

3.3.3 Implement the program generated through the use of the authoring system.

3.3.4 Revise the program based upon the results of the program implementation.

COMPETENCY 3.4 Use an authoring language to prepare a computer assisted instruction lesson that is appropriate for a special education population.

TASKS

3.4.1 Translate instructional design specifications into computer code.

3.4.2 Write code that will present text to students.

3.4.3 Develop program code that will accept and evaluate student responses.

3.4.4 Develop branching routines.

3.4.5 Personalize the program through code that will use the student's name.

3.4.6 Prepare graphics for use in the computer program.

3.4.7 Generate special characters for use in the program.

3.4.8 Develop sound effects for use in the program.

3.4.9 Document the program code so that others can interpret the effects that it has on the program.

3.4.10 De-bug the program code based upon formative evaluation of the program.

FUNCTION 4.0 INFORMATION MANAGEMENT

COMPETENCY 4.1 Use microcomputer-based telecommunication systems, such as SpecialNet.

TASKS

4.1.1 Identify telecommunication services that have implications for special education.

4.1.2 Determine the hardware and software needed to interact with a telecommunication newtwork.

4.1.3 Install telecommunication hardware and software.

4.1.4 Send messages to and retrieve messages from an electronic bulletin board.

COMPETENCY 4.2 Access remote data bases to retrieve information related to topics in special education.

TASKS

4.2.1 Determine the necessary codes to enable the use of a modem.

4.2.2 Develop use a password to gain entry into a remote data base.

4.2.3 Access information stored in a remote data base.

4.2.4 Store information obtained from a remote data base on disk and in printed format.

4.2.5 Troubleshoot telecommunications hardware and software systems.

COMPETENCY 4.3 Use a word processing program.

TASKS

4.3.1 Install a word processing program for a particular microcomputer system.

4.3.2 Demonstrate facility in the construction and editing of word processing files.

4.3.3 Use the file management features of a word processor to copy, read, write, and duplicate files.

4.3.4 Use print control codes to access special printer features.

4.3.5 Merge files for the purposes of a final printout.

4.3.6 Use utilities such as address merging and spelling checker programs.

COMPETENCY 4.4 Use a data base managment program for storing and retrieving special education data.

TASKS

4.4.1 Identify the data to be stored in a data base and the output requirements from its use.

4.4.2 Describe the hardware requirements for using a particular data base management system.

4.4.3 Develop a format for structuring a data base.

4.4.4 Enter data into a data base.

4.4.5 Conduct searches of the data base to retrieve information that it contains.

4.4.6 Print out reports from a data base.

4.4.7 Describe the limitations of a particular data base software program being used.

COMPETENCY 4.5 Use an electronic spreadsheet program for maintaining numeric records and preparing reports.

TASKS

4.5.1 Identify the types of numeric data to be entered into the spreadsheet and the report requirements.

4.5.2 Develop a template for the spreadsheet that will enable the appropriate manipulation of its contents.

4.5.3 Enter formulas to facilitate computation and "what if" analyses.

4.5.4 Manipulate the information contained in the spreadsheet.

4.5.5 Prepare reports from information contained in an electronic spreadsheet.

FUNCTION 5.0 COMPUTER PROGRAMMING

COMPETENCY 5.1 Write and de-bug a computer program for a special education application using a higher level programming language such as BASIC, Pascal, or LOGO.

TASKS

5.1.1 Identify the topic to be programmed and express it in a flow chart.

5.1.2 Construct an outline of the interactive sequences needed to successfully interact with the program.

5.1.3 Viewing each section of the outline as a programmable unit, write program code in the language chosen.

5.1.4 Identify and correct errors in the program code.

5.1.5 Use the program with a third party and make revisions based upon feedback obtained.

COMPETENCY 5.2 Describe the characteristics of different computer programming languages and illustrate ways to access programs written in different languages.

TASKS

5.2.1 Define the difference between a program written in machine code and one composed in an interpreted higher language, such as BASIC.

5.2.2 Explain the fundamental differences between the role of an assembler and the role of a compiler.

5.2.3 Explain the differences between the theory underlying BASIC and Pascal.

5.2.4 Explain the value of languages such as LOGO and PILOT.

5.2.5 Describe the software and hardware requirements for constructing programs in machine language, Pascal, BASIC, PILOT, and LOGO.

FUNCTION 6.0 TRAINING AND CONSULTATION

COMPETENCY 6.1 Determine the needs of special education personnel for training in the application of microcomputer technology.

TASKS

6.1.1 Design instruments and procedures for conducting a training needs assessment.

6.1.2 Conduct a training needs assessment.

6.1.3 Analyze data collected from a training needs assessment.

6.1.4 Develop a plan for the delivery of instruction that is based on the results of a needs assessment.

COMPETENCY 6.2 Develop and conduct in-service training on microcomputer applications in special education programs.

TASKS

6.2.1 Prepare a mission statement that will serve to guide the implementation of the training program.

6.2.2 Define the functions and competencies to be performed as a result of the training.

6.2.3 Specify objectives and evaluation criteria for each competency to be developed.

6.2.4 Identify, develop, and/or select content to be included in the training program

6.2.5 Design the structure for the training program.

6.2.6 Implement the training program.

6.2.7 Evaluate the training program and make any necessary revisions based upon the evaluation.

COMPETENCY 6.3 Provide consultation services to special education personnel who may require assistance in the use of microcomputers and related software.

TASKS

6.3.1 Identify the needs of those who require consultation services.

6.3.2 Define the outcomes for the consultation assistance.

6.3.3 Identify the activities needed to provide the consultation services.

6.3.4 Develop and maintain a file of human and non-human resources that can be used to support consultation services.

6.3.5 Establish rapport with the recipient of consultation services.

6.3.6 Deliver consultation services.

6.3.6 Evaluate the effectiveness of consultation services.

FUNCTION 7.0 EVALUATING MICROCOMPUTER APPLICATIONS

COMPETENCY 7.1 Evaluate microcomputer software for its potential application in special education programs.

TASKS

7.1.1 Identify the purpose of the software and its objectives.

7.1.2 Describe the type of instructional program.

7.1.3 Determine the characteristics of learners for whom the software is appropriate.

7.1.4 Describe the software format and ways information is presented to the learner.

7.1.5 Determine the extent of user control over the program.

7.1.6 Describe the computer use commands, academic demands, physical demands placed on the student, and the speed and accuracy of the program.

7.1.7 Identify the type and frequency of feedback and reinforcement.

7.1.8 Determine the extent of branching within the program.

7.1.9 Describe the user options for students and teachers.

7.1.10 Determine the adequacy of program documentation.

COMPETENCY 7.2 Conduct comparative analyses of microcomputer hardware and related equipment in order to make selection decisions.

TASKS

7.2.1 Evaluate the features of various microcomputer system configurations.

7.2.2 Evaluate the features of various adapted input/output devices.

7.2.3 Evaluate the features of different printers.

7.2.4 Evaluate the features of different modems.

7.2.5 Evaluate the features of various storage devices.

7.2.6 Evalute the features of different video displays

7.2.7 Evaluate equipment that is controlled by microcomputer, such as videodiscs.

COMPETENCY 7.3 Design and conduct studies to evaluate the impact of microcomputer applications in special education programs.

TASKS

7.3.1 Formulate research and evaluation questions related to microcomputer use.

7.3.2 Conduct reviews of literature related to microcomputers and their use in special education.

7.3.3 Design single subject and group experiments to obtain data to answer research and evaluation questions.

7.3.4 Collect data to answer research and evaluation questions.

7.3.5 Analyze research and evaluation data.

7.3.6 Prepare research and evaluation reports.

COMPETENCY 7.4 Use statistical analysis programs for microcomputers to analyze data collected for evaluative studies.

TASKS

7.4.1 Analyze the features of different data analysis programs.

7.4.2 Select an anlysis procedure appropriate for the data to be analyzed.

7.4.3 Design formats for recording data for computer entry.

7.4.4 Enter data according to program requirements.

7.4.5 Use the computer to analyze data and generate reports.

7.4.6 Interpret data analyses performed by the program.

THE UNIVERSITY OF KENTUCKY
SPECIAL EDUCATION MICROCOMPUTER SPECIALIST PROGRAM CURRICULUM

This program is completing its third year. For full-time students, it is a twelve-month program of studies leading to the Educational Specialist (Ed. S.) degree. In addition to the formal curriculum, there are five eight-week blocks of structured activities which involve ten hours per week supervising a microcomputer lab, evaluating software, using data bases, providing microcomputing support services, and developing computer assisted instruction programs. The formal curriculum is as follows:

Course	Credits
Fall Semester	
EDS 558 Problems in Special Education: Using Microcomputers An overview of applications of microcomputers in special education programs. (Fleming)	3
EDS 779 Seminar in Special Education: Microcomputer Information Systems Using an integrated word processing program, data base management system, and electronic spreadsheet for special education applications. Telecommunications in special education are also studied. (Blackhurst)	3
EDS 779 Seminar in Special Education: Developing Computer Assisted Instruction Principles of designing computer assisted instruction programs in special education are studied. Students also use authoring system shell programs to design CAI programs. (Bott)	3
EDS 558 Problems in Special Education: Using BASIC Programming with the BASIC language is studied, with specific applications in special education. (Shuping)	3
EDS 612 Advanced Practicum in Special Education A four hour per week practicum in applications of microcomputers in public school special education programs. (Fleming)	1
Spring Semester	
EDS 558 Problems in Special Education: Implementing Microcomputer Programs in Schools Procedures for designing microcomputer systems in schools. Emphasis is on selecting hardware and software and developing operational plans and systems. Different microcomputer systems and troubleshooting are also studied. (Fleming)	3

EDS 558 Problems in Special Education: Assistive and Adaptive Devices 3

Study of equipment and procedures to enable students with physical disabilities or sensory impairments to access microcomputers and use microcomputers for communication and environmental control. (Shuping)

EDS 779 Seminar in Special Education: Using SuperPILOT 3

The "Apple SuperPILOT" computer assisted authoring language is used to develop CAI programs suitable for use in special education. (Blackhurst)

EDS 799 Research Techniques in Special Education 3

Students design a special education microcomputer research project. (Blackhurst)

EDS 612 Advanced Practicum in Special Education 1

A four hour per week practicum in applications of microcomputers in public school special education programs. (Fleming)

Intersession

EDS 558 Problems in Special Education: Using LOGO 3

The LOGO programming language and its use in special education currricula are studied. (Shuping)

Summer Session

EDS 779 Seminar in Special Education: Advanced Topics in Microcomputing 3

A topical seminar on topics of current interest related to microcomputer use in special education. (Blackhurst)

EDS 789 Independent Study in Special Education 3

Completion of a microcomputing research project. (Blackhurst)

EDS 731 Practicum in Special Education Personnel Preparation 3

Students team teach a special education microcomputer course under supervision. (Fleming)

TOTAL CREDITS 38

POST-DOCTORAL FELLOWSHIPS

APPLICATIONS
OF
MICROCOMPUTER TECHNOLOGY
IN
SPECIAL EDUCATION
AT
THE UNIVERSITY OF KENTUCKY

The Department of Special Education at the University of Kentucky announces a Post-Doctoral Fellowship program in special education microcomputer technology. This is a full-time, individually planned, five month program of studies blending didactic instruction, observation and practicum, independent study, consultation, and research related to the use of microcomputers in special education programs.

THE FELLOWSHIP PLAN ------------

Applicants perform a self-assessment using a list of microcomputing competencies and tasks. In consultation with the fellowship program director, an Individualized Fellowship Plan (IFP) is prepared to guide the development of competencies selected for study during the fellowship period.

THE COURSES -------------------

Nine courses are available in applications of microcomputer technology in special education: Microcomputers in Special Education, Implementing Microcomputers in Special Education Programs, Computer Assisted Instruction Authoring Systems, Using BASIC, Using LOGO, Using SuperPILOT, Microcomputer Information Systems in Special Education, Assistive and Adaptive Equipment and Designing Microcomputing Research Projects. Fellows may take entire courses or only those portions that are of interest to them.

THE PRACTICA ------------------

A variety of observation and practicum experiences are available, including applications of microcomputers in different special education public school programs, supervision of a microcomputer laboratory, software evaluation, uses in higher education, electronic bulletin boards, student database management, IEP development, public school administration of special education programs, and using assistive and adaptive equipment.

THE INDEPENDENT STUDY ----------

Independent study opportunities are available. Abstracts and literature are available from a comprehensive search of the literature that has yielded more than 1,000 citations. Numerous pieces of software and equipment are available for use.

THE FINANCIAL AID -------------

Financial support is available in the form of Post-Doctoral Fellowships made possible by a grant from the Division of Personnel Preparation, Office of Special Education Programs, U. S. Department of Education. Each fellowship is for a minimum five month period: August 15 - January 15 and January 15 - June 15. Fellowships are awarded in the amount of $7,500 for the five-month period. Fellows also receive funding for a national and a state trip to visit microcomputer programs. Each fellow also recieves $500 to purchase software to use upon completion of the program. Each Fellow shares an office with one other person and has access to a microcomputer. The Apple II line of microcomputers is featured.

THE ELIGIBILITY REQUIREMENTS --

Fellows must hold the doctorate in special education and be employed full-time in a special education position. An application form must be completed, accompanied by a self-assessment of microcomputer competencies. A letter of support from the applicant's immediate supervisor is also required. Fellows must plan to complete a product as a result of the Fellowship. This can be a research article, piece of software, design for a course, or other product as negotiated. Previous experience with microcomputers is not necessary.

THE APPLICATION FORMS ---------

Contact:

A. Edward Blackhurst
Department of Special Education
229 Taylor Education Building
University of Kentucky
Lexington, KY 40506
Telephone: (606) 257-4713
[illegible]

POST-DOCTORAL FELLOWSHIP PROGRAM

APPLICATIONS OF MICROCOMPUTER TECHNOLOGY IN SPECIAL EDUCATION

A. Edward Blackhurst
Department of Special Education
University of Kentucky
1986

The Department of Special Education at the University of Kentucky announces the availability of a Post-Doctoral Fellowship program for special education leadership personnel who are interested in developing skills in the application of microcomputer technology in special education. This is a full-time, individually planned program of studies that blends didactic instruction, observation and practicum, independent study, consultation, and research related to the use of microcomputers.

Persons interested in the program must be able to spend a minimum of five months in residence at the University of Kentucky in order to be eligible for a Post-Doctoral Fellowship. The program is supported by a grant from the Division of Personnel Preparation, Office of Special Education Programs, U. S. Department of Education. Twelve Post-Doctoral Fellows (four each year) will be selected to participate in the program for the 1986, 1987, and 1988 academic years.

Planning the Fellowship Activities

Applicants for a fellowship must complete a microcomputing skill self-assessment. This instrument contains 43 competency statements that have been identified as contributing to the productivity of special education faculty. For each item, potential Fellows indicate whether they are either (a) not interested in developing that competency, (b) already competent in that area, (c) possess the competency to a limited extent and are interested in developing it further, (d) interested in developing an awareness in the area, and (e) interested in developing skills in the area. They also identify those areas of interest that are of highest priority to them. Competency that are not listed on the self-assessment are also identified at that time.

Based upon the self-assessment, a written Individualized Fellowship Plan (IFP) is then developed. In consultation with the fellowship program director, the competency self-assessment is analyzed and objectives are developed for the fellowship program. Activities and experiences are identified that will enable the attainment of the objectives. Procedures for evaluating whether objectives are met are also agreed upon at that time.

Formal Coursework

Nine formal courses related to applications of microcomputer technology in special education are offerred at various times throughout the academic year. Fellows may elect to take entire courses or specific units of interest within courses. This determination will be made at the time the

IFP is developed. Following is a brief description of the courses and a notation of when each is typically offered (F=Fall; S=Spring; IS=Intersession; SS=Summer School):

Microcomputers in Special Education (F,S,SS)
An introduction to microcomputers and their use in special education.

Special Education Microcomputer Information Systems (F,S,SS)
An integrated word processor, database manager, and electronic spreadsheet and telecommunications, with applications to special education.

Developing Computer Assisted Instruction in Special Education (F,SS)
Principles of designing computer assisted instruction and various CAI authoring systems applied to special education.

Using BASIC in Special Education (F)
The BASIC programming language, with applications to special education.

Microcomputer Implementation in Special Education Programs (S)
Procedures for integrating microcomputers into the special education curriculum, including troubleshooting.

Assistive and Adaptive Equipment in Special Education (S,SS)
Devices and software for facilitating computer access and environmental control by people with physical disabilities and sensory impairments.

Using SuperPILOT in Special Education (S)
Applications of the SuperPILOT computer assisted instruction authoring language, including development of a drill and practice and tutorial program for a special education application.

Research Techniques in Special Education (S)
Procedures for designing a microcomputing research project, including the development of a funding proposal.

Using LOGO in Special Education (IS or SS)
The LOGO programming language, with applications to special education students.

The above courses, plus practicum, are part of the Special Education Microcomputer Specialist Program that is operated by the Department of Special Education. This program leads to the Educational Specialist Degree or can be used as the first year of doctoral study in Special Education. In addition to the formal courses, an informal weekly "brown bag" luncheon seminar is conducted on topics of current interest to students. Fellows will be encouraged to participate in these informal activities.

Practicum Experiences

Fellows may elect to pursue practicum activities to obtain hands-on experience in the microcomputer applications specified in their IFP. A collaborative arrangement has been made with Fayette County Schools, the second largest school district in Kentucky, to make available special education classrooms in which microcomputers are being used. These include resource programs for students with mild learning and behavior disorders, self-contained units for students with behavior disorders, severe disabilities, visually impaired, and physical disabilities. Special education administrative applications can also be observed in the offices of principals of elementary, junior high, and senior high schools and in the central school administrative offices.

The College of Education operates two microcomputer laboratories, one equipped with Apple computers and the other with Radio Shack computers. An instructional media center (IMC) containing over 350 pieces of educational software is also available. In addition, the IMC provides a depository of software evaluations that are systematically distributed to faculty, according to their major areas of interest. A full-time technician provides microcomputer maintenance and repair services through the auspices of the IMC. Observation and practicum experiences are available in these facilities.

The Office of Educational Research in the College of Education maintains computer terminals to access the University's mainframe computer. Several brands of microcomputers are also available for student use in that office, including desk-top publishing using Macintosh microcomputers that are networked to a Laserwriter printer.

The Department of Special Education has numerous microcomputing applications that can serve as the basis for observation and practicum experiences. Among these are an undergraduate and graduate student database, fiscal record keeping, and procedures for the management of grant programs. The Department also operates an Educational Assessment Clinic that facilitates the use of software and adaptive hardware devices for people who have disabilities. Several research projects in which microcomputers are used are currently in progress, including the use of microcomputers for data collection and analysis. An electronic bulletin board is also maintained for use by faculty and public school special educators who have access to modems. Fellows will have access to this bulletin board as well as to the SpecialNet electronic message service. The Department's user name on SpecialNet is UKYSPED. A separate SpecialNet account has been set aside for students in the microcomputer programs. The user name for this account is UK.MICROS.

Although Fellows will have access to Atari, IBM, Radio Shack, NEC, and Wang microcomputers, the Apple II line of computers receives primary emphasis. All faculty and secretaries in the Department of Special Education have fully equipped Apple IIe systems, including printers, in their offices. Additional Apple systems have been placed in the offices of professional staff members, research assistants, and graduate students. Fellows will share an office that is equipped with Apple IIe microcomputer systems for their use while enrolled in the program.

Independent Study

It is anticipated that Fellows will want to pursue idiosyncratic topics in addition to those available through formal courses and practica. Independent studies will be designed as part of the IFP process. To facilitate independent study, Fellows will be given access to the technology research database that is maintained by the Department. This database contains abstracts and annotations of research on technology. The abstracts have been prepared by microcomputer specialist students and are stored on a 10 megabyte hard disk for retrieval. Abstracts of approximately 100 research reports are entered in this system each year. Users can obtain either an annotated bibliography or a complete abstract of the research article from the database. They can also obtain a printed abstract on a 5 by 8 inch card. If they want to examine the complete research report, they can obtain that from a file cabinet. Fellows will be taught how to use this system. They will also be encouraged to contribute to it as they read and evaluate research on the use of microcomputers.

In 1985, the Department contracted with the ERIC Clearinghouse on Handicapped and Gifted Children that is operated by the Council for Exceptional Children to conduct a search for literature on applications of microcomputers in special education. Five different electroinic databases were searched, resulting in the location of over 1,000 publications. Abstracts of those documents are available in the Department and will be made available to the Fellows. Individual searches of the ERIC database can be obtained through the College of Education library, which is housed in the Education complex.

Financial Aid

Each Post-Doctoral Fellowship is for a minimum five month period: either August 15 through January 14 or January 15 through June 15. Fellowships are awarded in the amount of $7,500 for the five-month period. Fellows also receive funding for one national and one in-state trip of their choice to attend a microcomputing conference or visit a program that is using microcomputers. Each Fellow also may select $500 worth of microcomputer software to purchase for future use. Fellows also receive faculty privileges at all University of Kentucky facilities, including the library and faculty club.

Eligibility Requirements

Applicants for Fellowships must hold the doctorate in special education and be employed full-time in a special education position. An application form must be completed, accompanied by a self-assessment of microcomputer competencies. A letter of support from the applicant's immediate supervisor is also required. Fellows must plan to complete a product as a result of the Fellowship. This can be a research article, a piece of educational software, design for a course, or other product as negotiated when the IFP is developed. Previous experience with microcomputers is not necessary.

Fellowship awards will be made by the Department of Special Education Committee on Graduate Admissions and Standards. Factors to be considered by the awards committee will be (a) Relevance of the statement of goals for which fellowship activities can be planned and provided within the program; (b) Potential impact of the Fellowship experience in terms of the product to be produced and what the applicant hopes to accomplish after returning to regular employment; (c) A completed self-assessment of microcomputing competencies; (d) A vita that documents that the individual has a record of providing leadership in special education; (e) The extent to which the applicant's immediate supervisor is supportive of the Fellowship, will provide a leave of absence, and will support implementation of the Fellow's activities upon return to the home institution.

Application forms and additional information can be obtained by contacting the Post-Doctoral Microcomputing Fellowship Program Director:

A. Edward Blackhurst
Department of Special Education
229 Taylor Education Building
University of Kentucky
Lexington, KY 40506-0001

Telephone: (606) 257-4713
SpecialNet User Name: UKYSPED

THE JOHNS HOPKINS UNIVERSITY

Dianne Tobin
The Johns Hopkins University
9366 Mellenbrook Road
Columbia, MD 21045

Phone: 301-338-8273

SpecialNet: JHUL

Number of special education students:

Undergraduate: Graduate: 50

Program Description:

Johns Hopkin's Technology for Educators program offers a variety of degree and certificate options, including a Master of Science in Education, a Certificate of Concentration in a technology area, a Certificate of Advanced Study, and Doctorate in Technology and Special Education

THE JOHNS HOPKINS UNIVERSITY

SCHOOL OF CONTINUING STUDIES

DIVISION OF EDUCATION
BALTIMORE, MD 21218 (301) 338-8273

At The Johns Hopkins University, graduate programs in both technology and special education are offered. Our courses are held in the evening and most of our students are employed full time as teachers or other school personnel. In a recent survey, it was found that most students in our program already have one Masters degree and have been teaching for approximately 10 years.

Many of our students, who are interested in computers in special education, are already certified in special education and/or have been teaching special needs students for several years.

Courses related to technology have been separated from traditional courses in a program entitled "Technology for Educators" both in regular and special education. This program includes some courses related to technology in special education, and students are encouraged to enroll in some of the courses for regular education as well. The attached list represents all the technology courses offered in the program. Courses marked with a star (☆) are specifically related to special education. Courses marked with an asterisk (*) are for general education students, but suitable for special education teachers as well.

Technology for Educators

For information on the master's program in Technology for Educators, see p. 122; doctoral program, p. 123.

851.609 Administrative and Management Uses of the Microcomputer
Designed for teachers and administrators, this course examines the issues, ideas and programs surrounding the use of the microcomputer as a tool for administration and instructional management. Through hands-on experience, participants explore practical uses for software which can be applied to their daily work.

Section 1. First term. Th. 4:15–6:15 p.m. IBM Lab. Kelly
Section 61. Second term. W. 5:00–7:00 p.m. IBM Lab. (Columbia) Kelly
$485 (includes lab fee). 3 credits.

871.426* Introduction to Technology in Special Education and Rehabilitation
Students are introduced to applications of personal computer and related technologies in special education and rehabilitation services. Current and future uses of a variety of technological devices are considered, including microcomputer hardware, interface, and peripheral devices, and software for instructional, rehabilitative, and management purposes.

Note: This course is not open to students enrolled in the Technology for Educators Program.

Section 91. Second term. M. 4:20–6:00 p.m. $435. 3 credits.
(Maryland Rehabilitation Center) Panyan

881.604 Educational Uses of Media: Instructional Design
Students become familiar with the procedures for the systematic development of instruction using various common media. Characteristics and schemes for selection and integration into instructional packages as well as current research on mediated instruction are covered. Relevant research on learning, communication and perception theories will be incorporated. Attention will be given to distance learning, telecommunications, audio conferences, video, and computer instruction.

Second term. Th. 4:15–6:00. $435. 3 credits. Nouar

883.715 Computer Applications in Measurement, Research, and Statistics
Students use statistical program packages such as the Statistical Package for the Social Sciences (SPSS) to analyze data from research and evaluation studies. Emphasis is on applying existing programs to computational problems. No prior knowledge of computers or programming is needed.

Prerequisite: Quantitative Research Methods 883.710 (formerly 86.710) and Intermediate Statistics 883.714 (formerly 86.714)
Second term. M. 5:50–7:00 p.m. $535
(includes computer time fee for non-doctoral students);
$1100, doctoral tuition. 3 credits. Otani

891.401* Introduction to Computers and Programming in Education

Students survey the use of computers and programming in schools. Computer linguistics and the different programming languages and hardware systems are discussed. Students review approaches to teaching programming and integrating flow charts and other methods of program planning. In addition, elementary commands in BASIC are introduced.

Section 1. First term. M. 4:15–6:15 p.m. (Homewood) Tobin
Section 61. Second term. M. 5:00–7:00 p.m. (Columbia) Staff
$465 (includes laboratory fee). 3 credits.

891.402* Educational Uses of Microcomputer Technology

This course introduces students to the range of possibilities for integrating microcomputer technology into educational settings. Current issues and research are discussed, and administrative, management, and instructional uses of technology to enhance education are reviewed in a combination of lecture and laboratory experiences.

Section 61. First term. W. 5:00–7:00 p.m. (Columbia) Staff
Section 2. Second term. W. 4:30–6:30 p.m. (Homewood) Pugh
$465 (includes laboratory fee). 3 credits.

891.404* BASIC Programming for Microcomputers I

BASIC programming language is introduced with emphasis on programming techniques applicable to education.

Prerequisite: Introduction to Computers and Programming 891.401 or permission of the instructor.
Section 61. First term. T. 6:30–9:00 p.m. (Columbia) Craig
Section 2. Second term. T. 6:30–9:00 p.m. (Homewood) Fanzone
$485 (includes laboratory fee). 3 credits.

891.405* BASIC Programming for Microcomputers II

Advanced techniques in BASIC programming, including text files, assembly language routines, sound and graphics, peeks and pokes, and modification to the operating systems are presented. Applications to educational settings are examined.

Prerequisite: BASIC Programming for Microcomputers I 891.404 (formerly 85.510) or permission of instructor.
Section 1. First term. M. 6:30–9:00 p.m. (Homewood) Williams
Section 61. Second term. W. 6:30–9:00 p.m. (Columbia) Craig
$485 (includes laboratory fee). 3 credits.

891.408* Graphics for Microcomputers

Programming techniques and software tools for use with microcomputer graphics are demonstrated and discussed. Commercial graphics packages, shape tables, and animation techniques are developed in a laboratory setting. Applications to educational settings are examined.

Prerequisite: BASIC Programming for Microcomputers 891.404 (formerly 85.510) or permission of the instructor. Basic II is recommended.
Section 1. First term. Th. 4:30–7:00 p.m. (Homewood) Heath
Section 61. Second term. Th. 5:00–7:30. (Columbia) Heath
$485 (includes laboratory fee). 3 credits.

891.410* LOGO I

This course explores the use of LOGO as a teaching tool in the classroom. Based on the philosophy of discovery learning, it consists of a combination of lectures and laboratory experiences. During the laboratory sessions, students work directly on microcomputers to learn LOGO as a programming language.

Second term. M. 5:00–7:00 p.m. $485 (includes laboratory fee). 3 credits. Stitt

891.411* LOGO II

In a combination of lecture and laboratory experiences, participants explore advanced graphics techniques using LOGO. Students learn to use LOGO as a programming language and to operate its list processing capabilities. Applications to educational settings are examined.

Prerequisite: LOGO I 891.410 (formerly 85.565) or permission of the instructor.
Section 61. First term. W. 7:00–9:00 p.m. $485 (includes laboratory fee).
3 credits. (Columbia) Stitt

891.414* Authoring Languages for Instructional Use of Microcomputers
Programs which have authoring capabilities are reviewed so students can enter and design their own curriculum. The course progresses from easy to use programs to an introduction to PILOT.

Prerequisite: BASIC Programming for Microcomputers I 891.404 (formerly 85.510) or permission of the instructor.
Section 61. First term. M, 7:00–9:00 p.m. $485 (includes laboratory fee).
3 credits. (Columbia) Engelmeyer

891.415* Super PILOT I
This authoring language allows educators to create instructional packages for classroom use. In a laboratory setting, students learn to use "turtle graphics" and the editor systems to develop music, graphics, and character sets to create lessons for computer aided instruction.

Prerequisite: BASIC Programming for Microcomputers I 891.404 (formerly 85.510) or permission of the instructor.
Second term. M, 7:00–9:00 p.m. $485 (includes laboratory fee). 3 credits. Engelmeyer

891.420* PASCAL I
The PASCAL language on the microcomputer is introduced. Emphasis is on the structured nature of programming through a combination of lectures and laboratory experiences. Applications to educational settings are examined.

First term. W, 7:00–9:30 p.m. $485 (includes laboratory fee). 3 credits. Mowbray

891.421* PASCAL II
Advanced techniques in PASCAL programming are studied through a combination of lecture and laboratory experiences. Applications to educational settings are examined.

Prerequisite: PASCAL I 891.420 (formerly 85.568)
Second term. W, 7:00–9:30 p.m. $485 (includes laboratory fee). 3 credits. Mowbray

891.425* Hardware, Peripherals, and Interfacing Devices
Students are introduced to all major elements of microcomputer hardware, including system architecture, CPU selection and design, I/O organization, communication standards, storage mediums, and programming of peripheral devices. Problems associated with Apple maintenance in school settings are explored.

Prerequisite: BASIC Programming for Microcomputers I 891.404 (formerly 85.510) or permission of the instructor.
Section 1. First term. T, 7:00–9:00 p.m. (Homewood) Rizer
Section 61. Second term. T, 7:00–9:00 p.m. (Columbia) Rizer
$485 (includes laboratory fee). 3 credits.

891.428* Interactive Video Disk Technology for Instructional Use
After considering the development and potential of interactive video disk technology for instructional use, students examine various types of interactive microcomputer-video disk equipment. Using an authoring system, students develop flow charts and compose, enter, run, and de-bug their own program.

Prerequisite: Authoring Languages for Instructional Use of Microcomputers 891.414 (formerly 85.534), Super PILOT I 891.415 (formerly 85.566), or permission of the instructor.
Section 91. Second term. T, 6:00–8:00 p.m. $485 (includes laboratory fee). Hiner
3 credits. (Maryland Rehabilitation Center)

891.430* Assembly Language
Assembly language on the Apple 6502 is introduced. Elementary binary and hexidecimal notations are reviewed. Students learn to enter and understand elementary machine language programs, utilize assemblers to program and assemble their own machine language subroutines, and incorporate the speed and efficiency of machine language into their basic programs. Applications to educational settings are examined.

Prerequisite: BASIC Programming for Microcomputers 891.405 (formerly 85.532) or permission of the instructor.
Second term. Th, 6:00–8:00 p.m. $485 (includes laboratory fee). 3 credits. DeBlase

891.432* Teaching Programming at the High School Level
Students intending to seek certification as programming teachers review methods of teaching computer programming languages to high school students. Other computer-related instruction at the high school level is also examined in this course.

Prerequisite: Knowledge of at least one programming language.
Second term. Th, 4:15–6:00 p.m. $485 (includes laboratory fee). 3 credits. Rust

891.433* Data Structures and Other AP PASCAL Topics

This course prepares students to teach the Advanced Placement course in Computer Science: PASCAL at the high school level. Topics include: recursion, linear data structures (including arrays, linked lists, stacks, and queues), trees, and algorithms for searching, sorting, data structure manipulation, and numerical operations. Special attention is given to instructional methods for presenting each of these topics to high school students.

Prerequisite: PASCAL I (891.420), or permission of the instructor.
First term. Th, 7:00–9:30 p.m. $485 (includes laboratory fee). 3 credits. Heath

892.420* Applications of Microcomputer Technology in Special Education/Rehabilitation

Students review the human/machine interface of microcomputers with special populations. Methods for selecting appropriate forms of technology and applying technology to specific populations is covered. Current products are studied for potential applications with disabled populations.

Note: For students in the Technology for the Handicapped program only.

Prerequisite: Hardware, Peripherals, and Interfacing Devices 891.425 or Hardware for Persons with Handicaps 892.602
Section 61. Second term. T, 5:00–7:00 p.m. $485 (includes laboratory fee).
3 credits. (Columbia) Rizer

892.435* Computerized Information and Data Management in Special Education

This course focuses on the administrative and technical consideration for using microcomputers in special education management application. These applications include individualized education programs (IEPs), database programs, telecommunications, and word processing.

First term. Th, 6:15–7:55 p.m. $435. 3 credits. Miller

892.602 Hardware for Persons with Handicaps

This overview course introduces the student to currently practiced techniques and hardware utilization for applying new forms of technology to the specific needs of people with disabilities. Adaptive devices for sensory, physical, and learning disabilities are presented and demonstrated. Students review case studies of successful applications of technology with disabled people.

Prerequisite: Introduction to Special Education Technology 871.426 or Introduction to Computers and Programming 891.401.
First term. T, 5:00–7:00 p.m. $485 (includes laboratory fee). 3 credits. Rein

893.410* Educational Software Selection and Evaluation

This course presents a current inventory and assessment of educational software programs, and provides procedures for incorporating and integrating these programs into the curriculum. In addition, participants study existing software evaluation forms and processes and apply this information to evaluate selected programs.

Section 61. First term. M, 7:00–9:00 p.m. $485 (includes laboratory fee).
3 credits. (Columbia) Staff

893.426* Application Packages for Instruction

Students examine instructional uses for various general database, spreadsheet, and word processing programs. In addition, techniques for using utilities with more limited applicability, such as Print Shop and Newsroom, are reviewed.

Note: Limited enrollment.
Prerequisite: Introduction to Computers and Programming in Education 891.401 or permission of the instructor.

Second term. T, 4:30–6:30 p.m. $485 (includes laboratory fee). 3 credits. Latchaw

893.427* Using Computers in Secondary Math Curriculum

This course is designed for teachers of secondary mathematics who want to use the microcomputer in the mathematics curriculum. In a combination of lecture and lab format, students review commercial instructional software, design lessons using spreadsheets and other application packages, and learn to use programming-type algorithms. Skill in BASIC programming is useful but not necessary.

First term. W, 5:00–7:00 p.m. $485 (includes laboratory fee). 3 credits. French

893.428* Using Computers in Secondary Science Curriculum

This course allows students to explore the use of both software applications and interfacing probes as a means to integrate microcomputer technology into the science class or laboratory curriculum.

Second term. Th, 8:00-10:00 p.m. $485 (includes laboratory fee). 3 credits. Kelly

893.430* Teaching Writing with the Word Processor

Participants learn techniques for using the word processing capabilities of the microcomputer to improve students' writing skills. Practice with a word processing package is included.

Prerequisite: Introduction to Computers and Programming in Education 891.401 (formerly 85.509), or permission of the instructor.
Section 61. Second term. W, 4:15–6:15 p.m. $485 (includes laboratory fee).
3 credits. (Columbia) Steeves

893.530* Independent Project in Technology

Students with a demonstrated ability in computer technology work on independent projects under the direction of the program adviser. Applicants must meet with the adviser and prepare outlines of proposed projects prior to registration.

Either term. Time to be arranged with adviser. $145 per credit.
1 to 6 credits. Tobin

893.830 Graduate Project in Technology

Students of demonstrated ability with a special interest in technology study under the direction of a faculty member of the Division of Education. Applicants must meet with the adviser and prepare an outline of the proposed project prior to registration.

Prerequisite: A minimum of 15 credits toward a graduate degree in education with a concentration in Technology for Educators.
Either term. Time to be arranged with adviser. $145 per credit.
1 to 6 credits. Tobin

893.845 Doctoral Project in Technology

Open only to students in the doctoral program with a minor or joint major in technology. Students work under the direction of a faculty member of the Division of Education. Applicants must meet with their major adviser and prepare an outline of the proposed project prior to registration.

Either term. Time to be arranged with adviser. $367 per credit.
1 to 6 credits. Tobin

Computer Literacy

Course Description

Microcomputer technology will be surveyed with primary emphasis on its application to special education and rehabilitation. Following a brief history of computers and description of how they work, the body of the course will be devoted to demonstrations and hands-on student interaction with microcomputer systems, software applicable to instruction and remediation, and special input-output devices used in adapting computers for disabled users. This is the introductory course in computer technology for teachers, therapists, parents and others who have little background or experience in this field and who wish to survey and become acquainted with a variety of personal computers and programs currently used in instruction and habilitation/rehabilitation.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Demonstrate a general knowledge of computers and their use by:

  1.1 Describing the major components of a microcomputer system and their basic function

    1.1.1 C.P.U. - Central Processing Unit/Hardware
    1.1.2 Integrated circuits
    1.1.3 Peripherals
    1.1.4 Software
    1.1.5 Languages
    1.1.6 Memory/internal
    1.1.7 Communication between CPU and Memory
    1.1.8 Storage devices

  1.2 Describing the capabilities of a computer
  1.3 Describing how computers are used in special education
  1.4 Discussing the impact of computers on society

2.0 Demonstrate familiarity with computer equipment by:

  2.1 Performing operations relative to the use of a range of different machines
  2.2 Operating a microcomputer system (turn on/off, run printer, monitor, disk drive, cassette, locate and run specific programs)

2.3 Installing peripheral cards, switches, and other commonly used items
2.4 Describing the general principles of care and maintenance of microcomputer systems
2.5 Performing preventive maintenance in terms of installing and protecting machines

3.0 Discuss specific uses for the microcomputer within special education by:

3.1 Providing examples of the computer as a personal assistive device
3.2 Describing the role and impact of computer assisted instruction
3.3 Describing organization of computer managed instruction
3.4 Describing administrative uses of the microcomputer in education
3.5 Describing the role and impact of the computer as a tool in education
3.6 Describing the advantages and disadvantages of computers in education
3.7 Identifying sources of software
3.8 Identifying sources of reviews and evaluations of software

4.0 Demonstrate how the computer functions as an information system by:

4.1 Describing the underlying principles of automation
4.2 Describing the orderly process in preparing, entering, storing, retrieving, checking and interpreting data
4.3 Preparing data for processing and in using output for decision-making
4.4 Illustrating the importance of precise codes and rules when transforming data

5.0 Demonstrate knowledge of the history of computers by:

5.1 Understanding development of number theory
5.2 Describing the five generations of computers and the impact of each
5.3 Describing the development of ideas of storage -- programs

Required Text

Bitter, G., & Camuse, R. (1984). Using a microcomputer in the classroom. Reston Publishing Company.

Recommended Text

Turkle, S. (1984). The second self, computers and the human spirit. Simon & Schuster, Inc.

Elementary BASIC Programming for Microcomputers

Course Description

BASIC programming language is introduced with emphasis on programming techniques applicable to education.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Understand parts of the machine, input, output, central processing unit.

2.0 Distinguish between internal and external memory RAM, ROM.

3.0 Use a disk drive to run a program

3.1 CATALOG, A, I, T, B in catalog
3.2 Be able to LOAD a program from disk
3.3 Be able to EXECUTE a program from disk
3.4 Be able to LIST a program from a disk
3.5 Be able to change a program on disk
3.6 Be able to LOCK and UNLOCK programs on catalog

4.0 Make disks compatible with system

4.1 format disks
4.2 save programs to disk

5.0 Change the name of programs on disk

6.0 Use the Keyboard input to write and edit programs.

6.1 power up switch
6.2 keyboard keys inc. shift --- & --- , RETURN, CNTRL, ESC

7.0 Understand monitor symbols

7.1 Blinking cursor
7.2 > *
7.3 How to clear the screen

8.0 Remove a program from computer's memory in order to write a new program.

9.0 Use elementary program statements to

9.1 print on the screen
9.2 create # variables

  - 9.2.1 use variables to count errors, correct answers, etc.
  - 9.2.2 use # variables to help in decision making

- 9.3 put data into a program and work with them
- 9.4 create string variables
  - 9.4.1 address children by name when they are working on a program
  - 9.4.2 to allow students control through yes/no statements

- 9.5 make screen format attractive
  - 9.5.1 formatting commands (HTAB, VTAB)
  - 9.5.2 PRINT statements to draw, skip lines, skip spaces
  - 9.5.3 use of commas and semi-colons
  - 9.5.4 use of FLASH-INVERSE
  - 9.5.5 graphics (low resolution & Intro to high resolution)

- 9.6 be able to write simple drill and practice mathematics programs
  - 9.6.1 generate random numbers
  - 9.6.2 understand arithmetic operations commands (+, -, *, /)
  - 9.6.3 understand INT functions

- 9.7 use decision making and looping programs statements GOTO, IF/THEM, FOR...NEXT

- 9.8 control the speed with which the program executes
  - 9.8.1 programmers control with speed and delay loop commands
  - 9.8.2 user control with INPUT and GET commands

- 9.9 use subroutines to make program more efficient
  - 9.9.1 write a computer program solving a two or more step problem
  - 9.9.2 provide document action within program
  - 9.9.3 flow chart a program for planning

- 9.10 refine programs developed already
  - 9.10.1 trace logic and procedure in program already written
  - 9.10.2 detect and correct errors in a program
  - 9.10.3 modify a program to get different results

10.0 Use arrays to categorize variables more efficiently.

11.0 Identify elementary commands for string manipulation.

12.0 Identify commands used with sequential and random access files.

Required Text

Presley, B. (1984). A guide to programming in APPLESOFT. New York: Lawrenceville Press.

BASIC Programming in Microcomputers II

Course Description

Advanced techniques in BASIC programming, including text files, assembly language routines, sound and graphics, peeks and pokes, and modifications to the operating system, are presented.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Create and use in programs both Sequential and Random Access types of files using DOS 3.3.

2.0 Use techniques of string manipulation to control text on screen.

3.0 Convert Binary, Octal, Decimal and Hexademical data values of one type into any other type.

4.0 Evaluate the outcome of Boolean expressions used in Applesoft programs.

5.0 Learn advanced techniques for programming in high resolution graphics.

6.0 Use shape tables stored on disk to include lower and upper case text information with graphics.

7.0 Use text page 2 to print text information onto High Resolution Graphics page 2.

8.0 Print standard ASCII characters to a CRT screen that are not available on the Apple II+ keyboard.

9.0 Create input routines that prevent unexpected keyboard or file inputs from causing the program to stop execution or execute improperly.

10.0 Identify and manipulate memory locations used by the operating system to customize the operation of the system monitor.

11.0 Translate standard sheet music into an Applesoft program that creates sound of the correct pitch and tempo.

12.0 Input machine language programs from documentation, store the program permanently to disk, and call the program from a BASIC program.

13.0 Modify the Disk Operating System to create a new set of operational keywords.

Required Text

Poale, Lon (1981). Apple II users guide. Berkeley: Osborne-McGraw Hill.

Educational Software Selection and Evaluation

Course Description

A current overview of software programs for use in education is presented as well as procedures for integrating these programs into the curriculum and school setting. In addition, students will study existing software evaluation forms and processes, applying this information in the evaluation of selected programs. Particular emphasis will be placed on the selection and evaluation of programs for use in special education programs.

1. Identify exemplary educational software relevant to the following skill domains:
   - 1.1 concept development
   - 1.2 functional academics
   - 1.3 language/communication
   - 1.4 recreation/leisure
   - 1.5 career education/vocational training
2. Demonstrate the utility of tool applications in an educational context:
   - 2.1 word processing systems
   - 2.2 data base management programs
   - 2.3 graphics and drawing
   - 2.4 electronic spreadsheets
3. Perform an internal evaluation of existing software designated for educational purposes
   - 3.1 apply knowledge of instructional design and learner characteristics to evaluate the program's educational merit
   - 3.2 determine the appropriateness and accuracy of the program
   - 3.3 determine whether the program involves the student in active learning experiences
   - 3.4 evaluate the program's technical merit as it relates to programming and ease of use.
4. Integrate software into the curriculum by:
   - 4.1 demonstrating its relationship to the educational objective (e.g., review, testing, tutorial)
   - 4.2 demonstrating its complementary relationship to other classroom activities
   - 4.3 designing non-computer activities to integrate with software lessons
   - 4.4 measuring the impact of the lesson(s) on student performance variables

5. Identify existing needs in educational software for a specific group of students (e.g., learning disabled, mentally retarded) and/or instructional domain.

6. Catalog and rank existing software for students with one specific handicapping condition and/or one specific instructional domain.

7. Formulate the specification requirements for an educational software application to a programmer by:

    7.1 defining the instructional objective
    7.2 communicating the need in technical terms
    7.3 describing the sequence and scope of instructional frames

8. Identify agencies/individuals who can reliably perform external evaluation of software.

9. Identify and compare the content of instruments designed for software evaluation.

Hardware, Peripherals, and Interface Devices

Course Description

This course introduces students to the basis of trouble-shooting on the Apple microcomputer and related peripheral devices, and enables them to handle everyday problems, as well as to avoid major disasters. In addition, students become familiar with the more popular peripheral devices used with the Apple, including printers, modems, and monitors. Problems associated with Apple maintenance in school settings are explored.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Compare and contrast existing hardware according to the following criteria:*

  1.1 Is the machine simple enough for teachers and students to use?
  1.2 Is the machine reliable?
  1.3 Are manufacturers' representatives conveniently located and reliable in repairing malfunctions?
  1.4 Are adequate peripherals and special equipment available to meet teacher and student needs?
  1.5 Are features (peripherals, memory, external ports, speed, real time clock, etc.) available at minimal cost?
  1.6 Will machines interface with larger machines for generalizable applications in terms of language and hookups?
  1.7 Is the operating and programmable language easy to learn and compatible with other machines?
  1.8 What is basic cost of machine compared with others on the market with similar features?
  1.9 Is the machine easy to load and initiate operation?
  1.10 Are adequate operating manuals available or is training available for teachers or other primary users?
  1.11 Is unit "self-contained", relatively free of ribbons, wires, and connectives?

2.0 Describe the various switches and switch configurations available for handicapped users such as:

  2.1 Single switches
  2.2 Dual switches
  2.3 Quad switches

3.0 Describe the use of the computer to facilitate one's control over their environment through:

  3.1 Multiple appliances system
  3.2 Single appliance controllers and components
  3.3 Self-help aids

4.0 Describe the use of the computer as a monitoring device to summon assistance.

5.0 Describe the use of the computer as an augmentative communication device considering such issues as portability, normalization, maintenance, and funding.

6.0 Describe the use of robotics with the handicapped.

7.0 Describe several applications of videodisc technology with handicapped individuals such as:

  7.1 The media development project for the hearing impaired at the University of Nebraska at Lincoln.
  7.2 The developments at the Exceptional Child Center at Utah State University in Logan.

8.0 Program peripheral devices for custom applications.

9.0 Evaluate alternative means of controlling computer input and output.

10.0 Describe hardware and software (programming) considerations for use of speech synthesis.

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* from Polsgrove, L. Considerations in purchasing microcomputers. Presentation at the National Conference on the Use of Microcomputers in Special Education, Harford, CT, March, 1983.

Authoring Languages for Instructional Use of Microcomputers

Course Description

This course will provide an overview of the authoring languages, PILOT, LOGO, and others of special interest (e.g., BLOCKS, TUTOR, etc.). The creation of CAI lessons through authoring systems and authoring languages will be a prime course requirement.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Access the author mode of Apple pilot to:

- 1.1 Initialize a diskette
- 1.2 Create/edit pilot lesson text
- 1.3 Create/edit graphics
- 1.4 Create/edit sound effects
- 1.5 Create/edit character sets
- 1.6 Copy a lesson diskette

2.0 Program in the LOGO language including:

- 2.1 Graphic commands
- 2.2 Numeric operations
- 2.3 Word and list operations
- 2.4 Defining and editing procedures
- 2.5 Conditional expressions
- 2.6 Controlling procedure execution
- 2.7 Input and output
- 2.8 Filing and managing workspace

3.0 Write and debug LOGO programs including:

- 3.1 Educational games
- 3.2 Enrichment activities
- 3.3 Problem solving

4.0 Modify and extend LOGO programs for instructional applications including:

- 4.1 Drill and practice
- 4.2 Simulations
- 4.3 Tutorials

5.0 Compare and contrast different authoring systems with respect to their ability to:

- 5.1 Empirically determine a reinforcer for each student
- 5.2 Vary content of program
- 5.3 Vary format of the program
- 5.4 Present instructional stimuli through different sensory modalities
- 5.5 Vary input mode
- 5.6 Reinforce correct responses on the appropriate schedule of reinforcement
- 5.7 Provide designated contingencies folling incorrect responses
- 5.8 "Call-up" student's performance
- 5.9 Analyze and change cues, reinforcement, and correction procedures if student is not learning
- 5.10 Using branching where the student demonstrates need for further concept development
- 5.11 Permit teacher interaction with system without prior programming skills

6.0 Use selected authoring systems to:

- 6.1 Select the presentation media and format appropriate to the lesson objectives
- 6.2 Organize the lesson content into a form suitable for entry into the computer
- 6.3 Enter the lesson content and edit it into the desired form
- 6.4 Test the computer implementation and further edit it as necessary to meet the lesson objectives
- 6.5 Designate the data to be recorded regarding the student's performance

Computerized Information and Data Management in Special Education

Course Description

This course will focus on the administrative uses of microcomputers to track student progress, to retrieve student information, or to group students. The use of computer systems to develop and monitor IEPs, score/record student performance, and prepare written reports will be demonstrated. Word processing, electronic mail, as well as data file systems will also be addressed.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Use the computer to store, monitor, and retrieve information on student placement and progress

  1.1 Monitor due process and procedural safeguards by specifying the status of 21 administrative procedures as being completed or ongoing
  1.2 Store demographic information on students, including name, address, phone number, etc.
  1.3 Store curriculum data including:

    1.3.1 students' objectives
    1.3.2 evaluative criteria for objectives
    1.3.3 strategies and materials for curricular areas

2.0 Use the computer to generate IEPs including:

  2.1 Strengths and weaknesses
  2.2 Demographic data
  2.3 Implementation data
  2.4 Numbers of hours in regular and special education
  2.5 Test data
  2.6 Student goals
  2.7 Prints objectives
  2.8 Evaluative criteria
  2.9 Strategies and materials utilizing the curriculum data stored

3.0 Use the computer to individualize instruction

  3.1 Group students for instruction by objectives according to whether:

    3.1.1 the individual student has achieved the objective
    3.1.2 still needs instruction

        - 3.1.3 the status of the student on a particular objective is undetermined

4.0 Use portable and handheld computers as behavioral observation devices.

5.0 Demonstrate the use of the computer to communicate with other computers and information sources:

- 5.1 Access SpecialNet for communication purposes
- 5.2 Access SpecialNet for review of bulletin boards
- 5.3 Obtain printout from SpecialNet messages or bulletin board information
- 5.4 Access library databases for literature searches

Applications of Microcomputer Technology in Special Education/Rehabilitation

Course Description

This course involves the observation, evaluation, and analysis of technology based applications for handicapped individuals. A primary requirement is to design and implement an individualized project using microcomputers and related technology.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Provide examples of traditional and non-traditional uses of microcomputers with the handicapped.

2.0 Illustrate the operation of alternate input devices (e.g., Adaptive Firmware Card, Zygo Tecra Scan, the Mouse, and Touch Screen).

3.0 Describe the strengths and limitations of voice activated technology.

4.0 Describe the current speech synthesis systems (e.g., Echo II, Votrax TNT).

5.0 Provide means of human interface with computers through expanded keyboards, direct selection, morse code, etc.

6.0 Design custom applications of interface devices with existing software.

7.0 Design custom applications of interface devices with environmental control units.

8.0 Observe serval successful applications of microcomputers with handicapped students.

9.0 Evaluate a handicapped student with respect to needs which could be addressed through technology.

10.0 Design and adapt a technology-based system for the identified needs of a handicapped student.

11.0 Introduce and implement technology-based approaches with selected students.

Computers in Instruction: Supervision and Organization

Course Description

Organizational factors influence the introduction of microcomputers in special education programs. Conversely this new technology affects the structure, schedule and organizational climate of the classroom. In this course students will learn to analyze and develop procedures for effectively integrating the microcomputer in classroom settings to optimize instruction.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Survey the variety of educational uses of computers and general characteristics of each (computer managed instruction, drill and practice, tutorial, simulations, instructional games, problem solving, evaluation and test item banking, record keeping and processing).

2.0 Describe various hardware characteristics, capabilities, and the effects on school application by:

  2.1 Describing specific instructional activities as they would be implemented by alternate hardware systems, and the accompanying changes in teacher behavior and responsibilities.
  2.2 Identifying or creating procedures for hardware/software procurement and maintenance.

3.0 Describe the social and legal implications of computers in schools and society, privacy, computer security, computers in the home.

4.0 Provide for the efficient and effective use of comuters in classroom settings by:

  4.1 Selecting microcomputer hardware and software for classroom use.
  4.2 Selecting appropriate and secure place in classroom for comupter use and storage.
  4.3 Identifying time periods for specific student use.
  4.4 Orienting each student to computer.
  4.5 Matching students needs with computers' capabilities in one of the following areas:

    4.5.1 drill and practice
    4.5.2 problem solving

    - 4.5.3 tutorial
    - 4.5.4 personal communicative device

5.0 Examine different models of computer use (computer labs, computer learning stations within classrooms, library and resource room, computer centers) and recommend most appropriate model for a given group of students.

Advanced Applications of Microcomputer Technology in Special Education/Rehabilitation

Course Description

Advanced technologies are presented in this course to enable users to be aware of the potentials (and limitations) of microcomputers in applied settings. Microcomputers will be characterized in terms of flexibility for synergistic combination with a variety of peripherals and complex devices and also the wide variety of available, interactive application development software tools. Thus the student may leverage on available technology, existing standards, and unique microcomputer features when specifying or creating systems and software. Hardware oriented topics include microprocessor types, co-processors, buss structure, expandability, peripherals, sound/visual effects, combined video, specialized devices, hardware interfacing methodologies, local area networks, and natural man/machine interfaces. Software oriented topics include compatibility issues, software transparency, concurrent applications, multi-tasking, windowing, device independence, communications, applications data interchange, structured interactive languages, menu-driven applications, integrated software, graphics systems, keyboard enhancers, and development tools. These topics will all be discussed in the framework of Special Education/Rehabilitation.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Integrate the knowledge and technical skills of previous courses to design, implement, and evaluate individually based applications.

2.0 Develop creative approaches for applying available resources to meet the needs of specific populations.

3.0 Implement technology-based applications to enhance a handicapped student's/client's communicative, daily living, or learning abilities.

4.0 Evaluate the technology-based application and adapt or customize the system as indicated by the student's/client's performance.

5.0 Contribute to existing resource groups for information, equipment, and student/client services.

6.0 Communicate the successful applications of technology to colleagues, supervisors, parents, and others.

7.0 Expand existing applications and recommend extensions to others seeking assistance.

8.0 Contribute as a team member with engineers, parents, and consumers to develop an optimally responsive system.

9.0 Identify sources of funding to secure technology services for handicapped individuals and access to such sources.

10.0 Identify new and planned products and devices and determine their appropriateness for use with specific individuals.

11.0 Provide input to companies developing new software, peripherals, and devices to meet the needs of handicapped users.

12.0 Develop an understanding of microcomputer hardware sufficient to understand the relative merit of various interface technologies and various hardware systems and enhancements in a variety of application areas.

13.0 Develop a clear understanding as to where the operating system fits in to encouraging a seamless environment between applications programs and the user, particularly important in the case of impaired users.

14.0 Understand the fundamental types of application software to better choose appropriate developmental as well as turnkey systems and know when to use each.

Seminar in the Education of Handicapped Students via Microcomputers

Course Description

The seminar, open to students in the Technology for the Handicapped program who are nearing the completion of the requirements for the Master of Science in Education degree, provides a final evaluation of their professional skills. Each student presents, orally and in writing, reliable evidence of having designed and implemented high quality programs for handicapped students. The objectives include: identifying specific student needs and strengths, establishing priorities for meeting student needs, planning and implementing programs which reflect the latest appropriate technological advances, reviewing progress, and modifying the programs in light of measured progress.

Competencies

To successfully complete this course of study, the student should be able to:

1.0 Assess a student and identify a specific instructional, communicative, or other need through the following sources:

    1.1 medical, social, educational, and psychological records
    1.2 selected norm-referenced test information
    1.3 selected criterion-referenced test information
    1.4 informal, but structured, observations
    1.5 information obtained from supervisors, colleagues from other disciplines, and from previous teachers
    1.6 information obtained from parents or other caregivers and, as appropriate, from the student

2.0 Identify a short term objective that:

    2.1 identifies and names the desired terminal behavior
    2.2 defines the important conditions under which the behavior is to occur
    2.3 defines a criterion of acceptable performance
    2.4 relates to longitudinal goals

3.0 Design a computer based program or aid to facilitate attainment of the following goals:

    3.1 augmentative communication system
    3.2 CAI
    3.3 environmental control unit
    3.4 prosthetic device
    3.5 telecommunication

4.0 Use an applied research design to evaluate the effectiveness of the selected program or aid.

5.0 Submit a written research report which adheres to the style requirements of the American Psychological Association Publication Manual.

Guidelines

1. Each student is required to describe and present the results of two programs or projects that he/she has conducted with handicapped students. One project should be designed for an individual need (e.g., environmental control, academic skills) and the second project should be designed to improve an individual's functioning in relation to others (e.g., cooperative leisure skills, communication).

2. Given that there is not enough time to design, conduct, and report on these projects in a single semester, it is very important that the projects be completed before the student registers for the seminar. The semester in which the seminar is taken can then be devoted to preparing the written reports.

3. Educational or treatment programs that are directed toward skill development must be based on sound assessment data that is collected through direct observation, clinical evaluations, the use of formal assessment instruments, and/or information from parents. Such programs must also be a part of the handicapped individual's individual education program (IEP) or individual program plan (IPP).

4. The projects reported in the seminar must be based on a review of the current professional literature. The literature review should include studies which are data-based but may include articles which are narrative accounts, case studies, or product descriptions.

5. Each project reported in the seminar should include provisions for the maintenance and generalization of use of the technology.

6. The projects that are reported in the seminar do not have to be successful. Even the most carefully designed and consistently implemented programs are, at times, unsuccessful in achieving their desired results. Each program must, however, be carefully designed, consistently executed, and systematically evaluated through the collection of valid and reliable data. Evidence that unsuccessful programs were revised or modified on the basis of evaluative data should also be provided.

7. Projects that are conducted to meet the requirements of courses taken in the master's program can frequently be used as a basis for the seminar reports. This is particularly true of the project that each student is required to complete in 85.531 and 85.555.

8. Each program does not have to address a single objective in a single curriculum/skill area, e.g., language, self-care, social skills, motor behavior, etc. Programs that are designed to simultaneously influence behavior in two or more domains are encouraged.

9. An applied behavior analysis design (reversal, multiple baseline, changing criterion, alternating treatments, etc.) should be employed to evaluate the effectiveness of each program.

10. The written descriptions of the projects must adhere to the style requirements given in the 1983 revision of the Publication Manual of the American Psychological Association. This Manual is available in the Johns Hopkins University book store.

11. It is recommended that each student submit preliminary proposals to Dr. Panyan prior to the implementation of his/her seminar projects. In return, the student will be advised regarding program design and evaluation procedures. Attachment #1 provides a form that can be xeroxed and used to submit preliminary proposals.

12. Dr. Panyan will, when necessary, make on-site visits to provide technical assistance in the development, implementation, and evaluation of each student's seminar projects.

13. Written project reports presented in previous semesters by students in the severely and profoundly handicapped area have been placed in blue binders in the Division of Education resource room (Whitehead Room 105). These reports, arranged in chronological order, can be used by the student as guides for the format and style of the written reports. However, these reports do not necessarily include technology applications.

14. Dr. Panyan will assist the student in preparing for his/her seminar presentations by:

    a) critically reviewing draft versions of seminar papers

    (b) helping organize and structure the oral presentations

(c) obtaining needed audiovisual equipment (overhead, projector, slide projector, video recorder, etc.) for use during the presentation.

15. The seminar meetings will be held during June, 1986 for the first group of students graduating from the technology for the handicapped program.

Attachment #1
Technology for the Handicapped
Preliminary Proposal

Name____ Date__________

Home Phone____________________ Work Phone____________________

* * * * * * * *

Purpose of project:____

Type of student/client who will participate:____________________

Precise definition of target behavior(s):____________________

Data collection method:____________________________________

Frequency of and place of data collection:____________________

Design to be used (e.g., multiple baseline, changing criterion, etc.):________

Additional information or questions:__________________________

UNIVERSITY OF MARYLAND

Charles MacArthur
Department of Special Education
University of Maryland
College Park, MD 20742

Phone: 301-454-5427

SpecialNet: UMD.INSTIT

Number of special education students:

Undergraduate: 200   Graduate: 100

Program Description:

The Dept. of Special Education offers a full concentration on computer technology in special education as part of its doctoral program. The department has one undergraduate and several graduate courses on technology. Computer courses are also offered in the C&I Department.

ADVANCED USE OF COMPUTERS IN SPECIAL EDUCATION
EDSP 680   Fall 1987

Applications of Computers in Special Education is an advanced course on applications of computers with handicapped students and adults. It assumes general knowledge of computer concepts and operation, educational applications of computers, and software evaluation. It emphasizes special features of CAI for handicapped students; interactive video technology; applications of artificial intelligence to intelligent CAI; tool applications such as word processing, telecommunications, and databases; prosthetic applications for sensory, communication, and physical handicaps; and issues related to implementation of computer applications in real settings. Throughout it emphasizes research, theoretical and practical issues, and potential future applications of computers with handicapped individuals.

READINGS

Articles on reserve as listed in the syllabus.

COURSE REQUIREMENTS

1. Read and be prepared to discuss the readings.

2. Write brief (2-page) reaction papers on 5 of the assigned readings.

3. Complete a comprehensive software evaluation of two related pieces of software, including a personal review, a review and discussion by two other individuals with varying backgrounds, and a tryout with a student.

4. Write a comparative evaluation of two word processors designed for students, or of two other pieces of tool software, such as databases.

5. Paper and class presentation. A literature and applications review focused either on a type of computer application, e.g., intelligent CAI, adaptive communication devices, or on an academic or cognitive area, e.g., writing instruction, automaticity, or on a combination, e.g., simulations in teaching life skills. The review should provide a thorough review of current applications with handicapped and non-handicapped individuals, research on these applications, potential directions for development in the future, and importance for handicapped individuals.

6. Final examination.

SESSION TOPICS AND READINGS

1. Effectiveness of computer-based instruction
    - Kulik, Kulik, and Bangert-Drowns
    - Clark
    - Kulik
    - Lieber and Semmel

2. What are computers good for? Precise management and delivery of instruction. Automaticity.
    - Hofmeister and Thorkildsen
    - Lesgold
    - Merrill and Salisbury
    - Gagne, Wager, and Rojas

3. Motivation.
    - Lepper and Chabay
    - Malone
    - Chaffin, Maxwell, Thompson
    - MacArthur, Haynes, Malouf, and Harris

4. Symbol systems.
    - Clark and Salomon.
    - Shavelson and Salomon.
    - Dickson.

5. Cognitive strategies and metacognition
    - Allen and Merrill
    - Thomas
    - Haynes, Kapinus, Malouf, & MacArthur

6. Writing instruction.
    - Daiute
    - Pea and Kurland
    - MacArthur and Graham
    - MacArthur and Shneiderman

7. More writing. Telecommunications.
    - Meyers
    - Rosegrant
    - Riel

8. Artificial intelligence: Expert systems
    - Hayes-Roth
    - Haynes, Pilato, & Malouf

9. Classroom integration
    - Becker
    - MacArthur, Haynes, Malouf, Mattson, & Dreifus
    - Winkler, Shavelson, Stasz, Robyn, & Feibel

10. Group interaction
    Webb
    Lieber
    Johnson & Johnson

11. Programming instruction
    Weir (Byte, Nov 1982)
    Linn
    Shneiderman

12. More artificial intelligence. Other future applications.
    Moore, Yin, & Lahm
    Barr & Feigenbaum

12a. Interactive video
    Malouf and MacArthur

13. Assistive devices: communication and environmental control
    Baker
    Creech

EDSP [illegible]: Advanced Use of Microcomputers in Special Education

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Addendum to Course Proposal
EDSP 680 Advanced Use of Computers in Sepcial Education

Grading

1.	Final examination	30%
2.	Paper and presentation	30%
3.	Two software evaluation assignments	15%
4.	Reaction papers	15%
5.	Class participation	10%

FITCHBURG STATE COLLEGE

Sandra Miller-Jacobs
Department of Special Education
Fitchburg State College
Fitchburg, MA 02173

Phone: 617-345-2151

Number of special education students:

Undergraduate: 200   Graduate: 100

Program Description:

Fitchburg State College offers a variety of technology related courses at the undergraduate and graduate levels In addition to stand-alone courses, technology is infused into other special education courses.

GRADUATE COURSE

USING MICROCOMPUTERS IN SPECIAL EDUCATION

SE 751 1(

Dr. Sandy Miller-Jacobs
Associate Professor
Spring 1987

Course Hours:

Tues. 5:00 - 7:25, McKay Computer Center B232
Office hour: 4:00 - 5:00 or by appointment,
McKay B134

Student Population:

This course is open to graduate students who wish to learn about the possibilities computers can offer individuals with special needs. Knowledge of microcomputers is not a prerequisite for this course.

Course Description:

This course will provide an overview of the application of microcomputers to special education. The role of computers for diagnostic, instructional and administrative purposes in special education settings will be examined. Students will use a variety of software (drill and practice, tool, simulation, and Logo) and determine the advantages and disadvantages for use with a special needs population. Adaptive devices will be examined.

Competencies:

1. Students will evaluate hardware and software currently available. in terms of their applicability for special needs populations of varying ages.
2. Students will list and describe peripherals that can enable handicapped individuals to use computers.
3. Students will demonstrate proficiency on the computer using word processing, data base and Logo.
4. Students will describe ways in which computers can be incorporated into the existing curriculum areas (including reading, writing, math., and behavior) for children with special needs.
5. Students will examine the use of computers in developing and maintaining IEPs.

Course Requirements:

Readings:

Text: Budoff, M., Thormann, J. & Gras, A. (1985). Microcomputers in Special Education. Cambridge, MA: Brookline Books.

Handouts

Articles on reserve in library

Written paper:

Complete a short (5 page) paper relating to the use of computers with special needs individuals. A minimum of 3 journal articles must be used. This paper is to be done using word processing.

Oral presentation:

Students will orally present one piece of commercial software, explaining how it can be used with children with special needs. A handout is to be given to each member of the class with a formal evaluation of the software and a description of how it can be used (lesson plan).

Logo project:

Students will create a picture using Logo. The picture is to be saved as a procedure and should have two colors.

Final Exam

Evaluation/Grading Is Based On:

Written paper	(35%)
Oral presentation	(35%)
Logo project	(15%)
Final examination	(15%)

All work must be handed in on time. One absence is allowed. Incompletes will be given only with prior agreement by professor.

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TOPIC OUTLINE

DATE	TOPIC
JAN. 20	Overview of course Hardware: care of computer
JAN. 27	Commercial software (Drill & practice, simulation)
FEB. 3 - 17	Word processing in special ed. class (Appleworks, Bank St. Writer, Magic Slate) IBM - Write to Read video Adult Literacy video
FEB. 24	Data base in special ed. class
MAR. 3 - 24	Logo in special ed. class MIT videos
MAR. 31	Oral presentations on software
APR. 7	Administrative uses - Joan Thormann
APR. 14	NO CLASS - PASSOVER
APR. 21	NO CLASS - CEC CONVENTION, CHICAGO
APR. 28	Adaptive devices slides Adaptive Firmware Card Switches Speech Synthesizer electronic wheelchair video
MAY 5	Future trends Living Textbook video "Decisions, Decisions" video "The Other Side" video "Voyage of the Mimi" video
MAY 12	Computerized IEP How can you do this if it's not in the IEP?? Evaluating the benefits of computer use by special ed. students

SEMINAR IN SPECIAL EDUCATION: MICROCOMPUTERS
SE 240

Dr. Sandy Miller-Jacobs
Associate Professor
Spring 1987

Course Hours:
Mon. 12:30 - 1:20
Wed. 12:30 - 2:20

Room:
Computer Lab, McKay B232

Student Population:

This course is open to students who wish to obtain a working knowledge of how computers are used with special populations. No prior experience with computers is necessary. Prerequisite: For special education majors, the Integrated Professional Program must be completed.

Course Description:

This course provides students with the knowledge and experience necessary to use microcomputers with individuals with special needs. Consideration is given to the funtionality of hardware, software and peripherals available for use by individuals with special needs. Students examine commercially available software, word processing and LOGO in terms of its applicability to special needs populations and existing curriculum. A practicum enables students to work with computers and children with special needs.

Course Requirements:

Readings:

Articles placed on reserve in library
Handouts

Mini-practicum:

Students will work for six weeks on the computer with children with special needs. The practicum may be done by a group of students or individually. Students will work with the college instructor and the teacher to determine the specific content (LOGO, word processing, available software.)

Students will spend the first week observing the teacher and/or the children using the computer. For the following five sessions, the students will work directly with the children on the computer. In some classes, students will be able to develop a mini-unit using the computer to teach the children. In some classes, the children will need lessons in order to better utilize the computer and/or the software.

Teachers will sign off on the practicum. A written report documenting the practicum will be handed in at the end of the semester by each student/group. The format for the report is: class data (type of class, description of students served, number of students worked with, dates, times), explanation of work done including lesson plans if used, and reaction to experience.

Learning Game:

Students will develop one self-correcting educational game that will reinforce the students' learning about computers when they are not able to work on the computer. The game is to be created using a manilla folder or self-contained envelop. On an index card attached to the game, list the following information: skill to be reinforced, prerequisite skills, age/grade level for whom the game is developed. On a single sheet of paper list the above information and describe the game. This sheet is to be given to all members of the class so that each of you will have a file of computer games.

Reaction Papers:

Two reaction papers are to be written on a student selected article relating to computers and special education. Give the complete bibliographic data and summarize the article in one or two paragraphs. The rest of the paper is to be your personal reaction to the article based on readings, class discussions and observations. This part of the paper should be written as if you were writing a letter to the author(s) who has asked you to comment of the article before submitting it for publication. Tell the author what you agree or disagree with, what points you think should be or should not have been raised, and explain your views.

Papers should be about two or three pages in length. One paper is to be done using word processing.

Personal Reflections:

As a future teacher it is important to capitalize on the unique opportunity to be learners of a relatively new body of knowledge and compare this to how children learn. Students are to complete a two page paper reflecting their experiences with the computer that includes: affective reaction to the computer, analysis of learning style, and implications for teaching.

Write this reflection as a diary entry. At least two entries must be made, one during the first two weeks of the semester and the other at the end of the semester. You should tell your diary how you feel about sitting and working on the computer, what you have learned about yourself (how you approach new situations, your ability to learn from peers, children and faculty), what makes you feel competent and/or incompetent as you learn (your need for structure, independence, practice) and how this knowledge will influence the way you teach.

Software Evaluation:

Using one of the forms in the text or reviewed in class, students will evaluate one software package in terms of its usefulness for individuals with special needs.

Logo Program:

Students will create a program in Logo, save it as a procedure on disk (Save "Masterpiece). Each program should include a minimum of 2 colors and use one subprocedure.

Examinations:

Midterm
Final
Cheating on exams will result in failure for the exam.

Absences:

Students are allowed three excused absences. (A two hour class consists as two absences.) No absences are allowed for the practicum. For students with more absences than this, their grade will be lowered by .5 per absence.

Competencies:

1. Students will evaluate hardware and software currently available, in terms of their applicability for special needs populations of varying ages.
2. Students will list and describe perpherals that can enable handicapped individuals to use computers.
3. Students will describe ways in which computers can be incorporated into the existing curriculum areas (including reading, writing, math, and behavior) for children with special needs.
4. Students will analyze the advantages and disadvantages of using computers for educating children with special needs.
5. Students will examine the use of computers in developing and maintaining IEPs.
6. Students will analyze the current literature on the use of computers with special needs populations.
7. Students will demonstrate a beginning level of proficiency with word processing and Logo.

Enabling Activities:

To achieve these competencies, students will: complete the assigned readings: attend class lectures; participate in class discussions and activities: view vidiotapes: use commercially prepared software, Logo, and word processing; participate in a practicum setting.

Evaluation:

Written documentation of practicum
Development of learning game
Examinations
Personal reflection
Reaction papers (2)

Evaluation of software package
Logo program
Use of word processing

Grading:

Each assignment will be graded and weighted as follows:

Learning Game	5%
Practicum paper	10%
Reaction paper	10% each
Personal reflection	5%
Logo Program	15%
Midterm	20%
Final	25%

The learning game will be graded on creativity, orignality, professional quality, and its educational value.

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JOURNAL OF LEARNING DISABILITIES
TEACHING AND COMPUTERS
CLASSROOM COMPUTER NEWS
ELECTRONIC LEARNING
PERSONAL COMPUTING
THE CATALYST
FAMILY COMPUTING
BYTE
T.H.E. JOURNAL
POPULAR COMPUTING
THE COMPUTING TEACHER

OUTLINE

Week	Date	Topic
1	Jan. 21	Course Overview Care of Computer & Disks
2	Jan. 26-28	Hardware & Software Considerations Commercial Software
3-5	Feb. 2-18	Logo & the Special Needs Child
6-8	Feb. 23-Mar. 11	Word Processing & Special Classrooms
9-10	Mar. 23-Apr. 1	Data Base & Special Classrooms
11	Apr. 6-8	Learning Center Learning Games Various Uses of Computers in Special Classes - practicum experiences
12-13	Apr. 13-22	Commercial Software
14	Apr. 27-29	Adaptive Devices
15	May 4-6	Computerized IEP Classroom Organization

IMPORTANT DATES TO REMEMBER

Jan. 28	Personal Reflection 1st entry (not submitted)
Feb. 11	Reaction Paper #1 due
March 2 - April 17	Practicum experience begins and ends
March 4	Logo Project due
March 9	Midterm
March 25	Reaction Paper #2 due (word processed)
April 8	Learning Game due
April 15	Practicum Paper due
April 27	Software Evaluation due
May 4	Personal Reflection due

UNIVERSITY OF MISSOURI - KANSAS CITY

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Phone: 816-276-2464

SpecialNet: MOUMKC

Program Description:

UMKC is operating a state funded grant that provides training and technical assistance to LEA, SEA, and IHE personnel throughout the state.

Technology Center Triad: A Comprehensive Training Model for Higher Education In Special Education Technology

by

Linda E. O'Donnell, Professor
University of Missouri-Kansas City

for

CEC/RETOOL Roundtable
Washington, D. C.
16-17 July 1987

Technology Center Triad: A Comprehensive Training Model for Higher Education In Special Education Technology

The Technology Center Triad proposes a considerable expansion of the current models employed by "institutions of higher education" (IHE) for special education technology training. Several contrasts can be made between the current models and the proposed model.

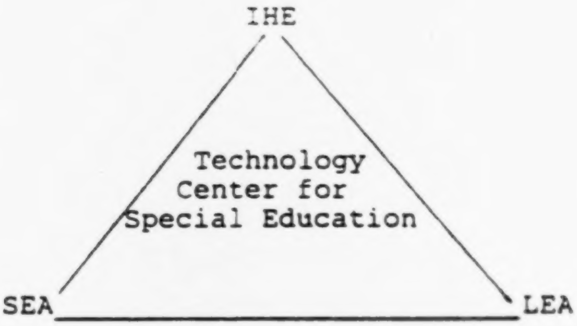
Comparison of Two Models

Current IHE models incorporate two major types of training. One offers separate technology course(s) and the other provides infused technology content into the curriculum of existing special education courses.

Whether the separate or infused training approaches are being recommended, the IHE focus traditionally has remained on the training of students. The Technology Center Triad recommends broadening the focus to training of IHE faculty members as special education service-providers. Furthermore, the Technology Center Triad model proposes the addition of service providers from both "local education agency" (LEA) and "state education agency" (SEA) to the target group to be trained. This more comprehensive training model for higher education in special education technology would serve the IHE, LEA, and SEA simultaneously in an integrated and coordinated manner.

Another signigicant difference is that the Technology Center model service providers in the IHE, LEA, and LEA would all be provided with integrally linked "technical assistance" and "training." Training would not be considered as adequate in isolation.

The proposed Technology Center can be figurally represented. University faculty members at an IHE-based, technology center for special education provide leadership in training. They coordinate the special education technology training and technical assistance for all IHE, SEA, and LEA service providers thoroughout the state.



The traditional approaches deal with the single institution, rather than the coordination of the multiplicity of institution influencing service providers' quality of services. The proposed plan includes the many institutions including the IHE, LEA, and SEA.

Usually, IHE training is limited to its own geographic region for services. The proposed model has a state-wide service area. In technology this seems to be necessary for solving a variety of training problems.

For example, take the issue of improving the use of the IEP. In the IHE, the computerized IEP with its goal and objective banks need to become part of the training in courses where the IEP is taught. In the LEA, the computerized IEP needs to become part of the service delivery. In the SEA, the computerized IEP may be selected as a state-wide, subsidizied system of reporting which is monitored for compliance in order to allocate funds to the district. Only by coordinating technical assistance and training programs, and by addressing each type of need on the same topic, can the use of computerized IEP be effectively improved.

Compare the following features of the IHE training model (Plan A) with the IHE, LEA, SEA training model (Plan B):

Feature	Plan A	Plan B
-Goal	Train graduates in technology through inservice or preservice	Provide tech. to handicapped or gifted students in

	with programs developed separately at IHE's	special educ. through the state
-Target Group	University students	IHE, LEA, SEA service-providers
-Delivery	Course(s) both separate tech. courses and infused tech. content into regular courses and curriculum	Same as Plan A plus: Tech. IEP for individual; problem-solving as content for training IHE, LEA, & SEA staff; "focus" groups; NAPSET and RETOOL models adapted to state-level; case-management model
-Curriculum	Selected and prioritized by faculty at IHE	Selected and prioritized by user/trainee at IHE, LEA, or SEA
-Outcome	Trained graduates who disperse into isolated, unsupported system	Groups of service providers who become supported by network of technical asst. and training in technology applications for spec. educ.
-Evaluation	Tests, grades in courses, degrees, & certification	Successful special educ. application provided by service providers in IHE, LEA, & SEA; successful comprehensive support network

-Primary focus	Individual students' skills through group training	Institutional procedures and processes with comprehensive support network of technical assistance and training

Rationale for Expanding Model

One reason for selecting Plan B over Plan A is that fewer than three percent of the LEA teachers each year are new IHE graduates. Therefore, Plan A may be ineffective in training the majority of service providers.

Also, even when Plan A prepares the service provider extremely well, the person then goes out into a setting which fails to allow application of the fine training. That is, the school may lack the funds, administrative support, space, equipment, technical assistance, and inservice training to apply special education technology.

On the other hand, Plan B promotes the development of the institutional processes, procedures, and resources which will enhance the application of special education technology in IHE, LEA, and SEA settings throughout the state.

Premises Underlying IHE, LEA, SEA Model

The proposed Technology Center Triad (Plan B) asserts several premises.

1. Effective funding, planning, and implementation of special education technology requires participation of the IHE, LEA, and SEA.

2. Technical assistance and training are integrally linked within the field of special education technology.

3. Service providers, themselves, must become proficient in special education technology if handicapped and gifted students are to benefit. This requires a support network of training at the level of service delivery (LEA).

4. State-wide responses to problems in special education technology need to be included as an option because of the expense and nature of the

field of technology.

5. The scope of technology for special education is so broad that it requires more than a short-term, educational response; industry, parents, and government must also be enlisted in helping to provide long-term programs of technical assistance and training.

6. The rapid changesof the technology field indicate the need for a team of experts who continue to learn as part of their jobs. The proposed model recommends that at least twenty percent of a staff's full-time be assigned to staff development; this can provide the time for learning and leadership and would be an investment in the the state. Such a team effort would allow in-house experts who are readily available to assist the IHE, LEA, and SEA in special education technology.

7. Planning is required for effective implementation. A "pre-planning strategy" is needed to design the plan. This missing step can cause failure for service providers. The Technology Center staff can guide IHE, LEA, and SEA staff through these processes.

8. Any relevant "content" can be used to develop the service-providers' network of technical assistance and training in special education technology. Therefore, training can be site-specific, topic-specific, and individualized to the people being served. It can simultaneously follow the generic technical assistance and training model for the triad network.

Twenty SP Steps

The Technology Center Triad model can be site-specific and content-specific, yet generic in steps of implementation. These features of the model make it a service-provider based model for technology development. The service-provider (SP) steps to technical assistance and training in technology include:

Steps	IHE	LEA	SEA
1. Identify service provider			
2. Identify target population to be served			

	IHE	LEA	SEA
3. Select leadership/technology coordinator			
4. Select technology team members			
5. Design a "pre-plan"			
6. Design and begin formative evaluation			
7. Design and begin a management system			
8. Define uses of technology/ competencies			
9. Assess SP needs & competencies			
10. Prioritize SP needs & competencies			
11. Develop SP goals			
12. Prioritize SP goals			
13. Develop SP activities			
14. Prioritize SP activities			
15. Delineate SP timelines			
16. Delineate SP resources			
17. Implement SP technology plan			
18. Evaluate SP technology plan			
19. Refine SP technology plan based on formative and summative evaluation			
20. Re-enter steps needed to continue the process effectively			

Additional Resources

The Missouri Technology Center for Special Education is in the second year of a multi-year project implementing the proposed model. It was developed in cooperation with IHE, LEA, and SEA representatives in Missouri. The responses and results are excellent. For other people who wish to begin such a state-wide, technology center model of training and technical assistance, the following resources are recommended.

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Gilbert, S. (1986) EDUCOM's guide to corporate associates: A comprehensive guide to the corporations that support institutions of higher education through affiliation with EDUCOM (1st ed.). Princeton, N. J.: EDUCOM. [P. O. Box 364, Princeton, New Hersey 08540].

Mayo, M., French, L., Kahn, K., & Loucks-Horsley, S. (1986) Final report summary: The National Assistance Project for Special Education Technology (NAPSET). Andover, Ma.: The Network. [290 South Main Street, Andover, Massachusetts 01810].

McClellan, E. (1986) Project RETOOL: Training in advanced application of microcomputers in special education for post-doctoral leadership personnel. Excerpts from the proposal submitted to the U. S. Department of Education, Office of Special Education and Rehabilitative Services and approved May 9, 1986.

Valdez, G. (1983) Planning for educational technology: Report of the state of Minnesota Department of Education. White Bear Lake, Mn.: Minnesota Curriculum Services Center.

In addition, feel free to contact the Technology Center for Special Education, Room 24, School of Education, University of Missouri-Kansas City, Kansas City 64110. The in-state (Missouri) number is 1-800-872-7066. The local and out-of-state number is 1-816-276-1040. The SpecialNet user name is MOUMKC.

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MONMOUTH COLLEGE

Ruth C. West
Department of Education
Monmouth College
West Long Branch, NJ 07764

Phone: 201-571-3437

Number of special education students:

Undergraduate: 25   Graduate: 55

Program Description:

Monmouth College has a new training grant aimed at incorporating computer usage into all undergraduate education programs.

FY 1988

COMPUTERS IN CURRICULA GRANT PROGRAM

PROPOSAL ABSTRACT

1. PROJECT TITLE: Computer Literacy Applied to Teacher Education

2. INSTITUTION: Monmouth College

3. PROJECT DIRECTOR: Ruth C. West

4. ABSTRACT:

The proposed project builds on knowledge acquired in an introductory computer literacy course. It's goal is to develop professional competence in teacher education students at Monmouth College by integrating representative computer related assignments with those required in education courses, beginning with the sophomore year and ending with student teaching in the senior year. Through these assignments students will familiarize themselves with microcomputers commonly used in schools and with their educational use.

Class assignments have been designed to give students practice in the four major areas useful to educators: selection and use of available commerical software; word processing for professional use; adaptation of programs for classroom use; and communication with schools and professional groups through networking. Faculty have examined possible assignments, and will meet to evaluate the products throughout the year.

These activities will be supported by an educational laboratory, designed to simulate conditions in public schools. Twelve microcomputers and printers, similar to those used in education, will be available for student use. Accessories and software, useful to teachers, will also be available. A graduate student, familiar with computers and their potential for educational use will be present fifteen hours a week to provide assistance for beginning students.

Three days of inservice training will be provided for participating faculty, for the computer center coordinator, and for the student assistant. The laboratory will be housed in a secure classroom in the vicinity of the computer center and locked except when supervised. Software, placed in the computer center library will be available by request. A security camera will provide surveillance for the laboratory from the computer center. All education students will complete specified assignments in the laboratory.

Evaluation will be provided by faculty, students, and an external consultant on a formative level in January 1988, and on a summative level July 1988.

Specific skills needed by teachers can be classified under these categories as follows:

Selection and Use of Software 1. Teachers should be knowledgeable about the increasing supply of educational software available for their use. 2. They need to develop their own criteria for software evaluation. 3. Teachers should be able to select software to expand, supplement, and sometimes substitute for personal instruction. 4. They should know how to schedule software use effectively into the time limitations of the school. 5. Teachers should know how to utilize software for creative effectiveness.

Wordprocessing, An Instructional Tool 1. Teachers should be able to use the computer as a wordprocessor. 2. They should be able to perform routines such as (a) writing, correcting, organizing print on page, moving passages; (b) using facilities such as spelling and grammar checks and mailmerge; (c) developing templates and form letters for retrieval. 3. Teachers should be able to write tests, and to be able to create test banks for multiple choice, TF, and short answer tests. 4. They should be able to use word processing for data management tasks, such as inventories. 5. They should be able to create spreadsheets for recording and analyzing grades.

The Computer in Program Development Teachers need to have a basic knowledge of how programs are developed. They should have ome familiarity with simple computer languages popular in education and be familiar with their use.

The Computer as a Networking Tool The increasing development of networking systems for information sharing and research make it important for teachers to be familiar with the networking systems created in education, and with their potential in the expansion of knowledge in the educational environment.
The proposed laboratory and program is designed to introduce this possibility at Monmouth College. At the same time it intends to improve the general quality of student assignments through its word processing and manuscript managing programs, its spelling and grammar checkers, and finally, its homeworking and typing tutor programs.

Project and Instructional Objectives

The project we propose will integrate the use of computers into courses taught at all levels in the Education Department. The proposed program creates an education computer laboratory and will achieve its goal through a series of assignments that demonstrate competence in application of computer skills useful to teachers, software evaluation, and implementation of appropriate software in a lesson plan.

The following are the specific objectives for the target courses:

ED 310, Principles and Practices of Education, K-12, taught by Dr. Bronfeld, introduces students to the principles and practices of elementary and secondary education including curriculum planning, evaluation procedures, classroom management nd school organization. Observation and participation in actual classroom procedures are required through structured field experiences. Before entering this course, students will pass a computer literacy test, developed in consultation with instructors in the college wide computer literacy course. Students will then write their field experience reports using the Appleworks program, checking their reports with Sensible Grammar and the Webster's New World Dictionary. They will be introduced to the Typing Tutor and Type! programs to improve their reporting capabilities.

ED 313, Teaching Reading in the Elementary School, taught by Dr. Becza, introduces students to principles, methods, and materials applicable to teaching reading in the elementary school, and covers problems relating to readiness, word analysis, comprehension, and reading-study skills. Opportunities for practice are provided. Students will be introduced to software evaluation and methods for creatively incorporating software into reading instruction. Students will develop criteria for evaluating instructional software, and will utilize resources at the New Jersey State Department of Education Central New Jersey Educational Technology Center to for this purpose.

ED 324, Junior Professional Semester, taught by Drs. Becza, Giroud, Schectman, Smith, and special guests, covers elementary and early childhood curriculum and methods in art, health, language arts, mathematics, music, natural science, physical education, reading and social studies. This is a full-time, full semester experience. Students will continue to use Appleworks, Sensible Grammar and Webster's New World Dictionary to write ects and lessons.

For the Science and Social Studies component they will:

1. Develop three tests for the three lessons taught using Quick Test and Crossword Magic.
2. Submit a printout of all the cards developed for their resource file using the program Homework Helper.
3. Create a program that will utilize the spreadsheet capabilities of the word processor to create forms for roll books, lesson plan formats, and a grading system, using Classmates; an evaluation form for oral presentations,and awards generated in a Printshop and Printshop Companion programs for success in academics; warning notices for failure to complete work or insufficient mastery of assignments; and a learning station for either social studies or natural science, using Multiscribe, Paintworks or Homework Helper.

For the reading and language arts component students will:

1. Develop a test appropriate to the subject, using the program Quicktest.
2. Continue the software evaluation process.
3. Plan a lesson in reading or language arts which integrates existing commercial software successfully, using Paintworks or Multiscribe.
4. Learn how to teach word processing to pupils using Appleworks.

APPENDIX A: REFERENCES

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McCroskey, M. (1987). Technology update.Technological Horizons in Education,14(6),12-13.

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TRENTON STATE COLLEGE

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Trenton, NJ 08625

Phone: 609-771-3016

Number of special education students:

Undergraduate: 100   Graduate: 200

Program Description:

Trenton State College is operating a project that will integrate technology into the undergraduate special ed. curriculum. Major activities include identification of technology related competencies, matching courses with competencies, and developing CAI and CMI modules.

ABSTRACT

The proposed project is designed to enhance the Special Education curriculum by integrating applications of computer technology for handicapped individuals into undergraduate courses in a coordinated and systematic manner. The first project objective is to revise the CONTENT of selected courses. The following applications of computer technology will be the focus of this objective: making computers accessible to the handicapped, using computer-assisted instruction (CAI) and computer-managed instruction (CMI) with handicapped children, using word-processors and utilities as adaptive aids, enhancing communication abilities through the use of electronic alternative communication systems, and utilizing telecommunications networks to access specialized information. The second objective focuses on enhancing the PRESENTATION of subject matter in courses by using an authoring system to create customized CAI programs for use by Special Education undergraduates.

Major activities include revising and validating a list of student competencies related to using technology with handicapped children; matching courses with specific competencies; creating six learning modules which will include hands-on activities for students; developing a videotape/disc which will show handicapped people using and benefitting from the technology; selecting and acquiring an appropriate authoring system; training faculty in the use of the authoring system; using the authoring system to develop two customized programs for undergraduates; and developing project dissemination materials.

Funds are requested for released time for the project director and two faculty members; overload pay for two faculty members; a graduate assistant; selected hardware and software which have particular applications for handicapped people; an authoring system; two consultants to provide technical assistance, training, and evaluation; Library resources; Media Center support for the creation of a videotape/disc; subscription to SpecialNET; and the holding of four one-day retreats for the Department to work together without interruption on project activities.

Within two years it is expected that every undergraduate in the Special Education program will benefit from project activities. In addition, the Department will assume a leadership position among the state colleges as other special education departments seek to integrate applications of computer technology into their programs. Finally, this project will move the Special Education Program towards distinction as it will become the only undergraduate program in the country to produce teachers who will be prepared to fulfill the tremendous promise technology holds for disabled children.

SPECIAL EDUCATION MEETS THE CHALLENGE: CREATING A MODEL UNDERGRADUATE CURRICULUM

INTRODUCTION

The purpose of this proposed project is to enhance the Special Education curriculum by integrating applications of computer technology for handicapped individuals into undergraduate courses in a coordinated and systematic manner. Such a comprehensive revision of the curriculum will move the Special Education Program towards distinction as it will become the only undergraduate program in the country to produce teachers who will be prepared to fulfill the tremendous promise technology holds for disabled children.

Before describing the proposed project in detail, it is important to clarify why being a creative user of computer technology is so essential for special education students. Graduates of our program are employed as teachers of handicapped children and adults. For many of their handicapped students, the computer has the potential to radically improve the quality of their lives by enabling them to compensate for their disabilities in ways previously only imagined (Brubaker & Hobson, 1985). Quadriplegics with cerebral palsy whose speech is unintelligible can communicate complex thoughts for the first time through the use of a portable computer which is modified with an adaptive switch for input and a speech synthesizer for output (Trachtman, 1984). Blind adults can become less dependent on others and less isolated from the seeing world because computers have been designed which output in Braille and synthesized speech, as well as standard hard copy (Candler, 1986). Word processing programs can free learning disabled children from the debilitating frustration they experience in trying to write (Engen-Wedin & Johnson, 1987), and computer-assisted instruction can provide essential repetition, feedback, and problem-solving challenges for children who have learning disabilities, emotional disturbances, and mental retardation (Turkel & Podell, 1984).

Most handicapped people, however, are NOT benefitting from the explosion of technology because their teachers are largely ignorant of the possibilities and/or the skills needed to see them realized (Hutinger & Gentry, 1986). College and university-based teacher-preparation programs typically lack the fiscal resources and faculty expertise needed to integrate computer technology into the special education curriculum (Blackhurst, 1986). According to Susan Elting, Project Director of the Center for Special Education Technology (Council for Exceptional Children), the few programs which have overcome these barriers have done so with the support of outside funding and only at the graduate level (e.g., Teacher's College at Columbia University has been awarded a grant by IBM; the University of Kentucky and Peabody College at Vanderbilt University are recipients of Federal Personnel Preparation grants). With support from the Curriculum Enhancement funding, the Department of Special Education will bring recognition to Trenton State College by creating a model undergraduate curriculum which will produce teachers who will be prepared to use computer technology to enhance the learning and lives of New Jersey's handicapped children.

Evidence of the Department of Special Education's commitment to infusing computer technology into its coursework can be found in its activities of the past year. On March 28, 1987 the Department, in conjunction with the Office of Continuing Education, sponsored a full-day conference on Computers and Special Education which provided training for professionals from all over New Jersey. Of particular note, the Department was the only Special Education program in the state to be awarded a grant from the N.J. Department of Higher Education for a Computer in Curricula project. This one-year, $20,795 grant, titled "Computers in the Special Education Curriculum: Preparing Teachers of the Handicapped for Today's Technology," has enabled us to gather necessary background information, provide training for faculty, order core hardware and software which have specific benefits for handicapped individuals, and develop three teaching/learning modules. One of the results of the DHE project has been that Special Education faculty from other state colleges have begun looking to us for leadership in this area and directing inquiries to our faculty. As productive as the project has been, however, its limited budget forced us to concentrate on only two courses and prevented the kind of comprehensive changes the Curriculum Enhancement funding would support.

SPECIFIC PURPOSE(S)

PROJECT GOAL:

To enhance the undergraduate curriculum in Special Education by integrating applications of computer technology for handicapped individuals into courses in a coordinated and systematic manner.

PROJECT OBJECTIVES:

1. To revise and enhance the COURSE CONTENT in Special Education by incorporating applications of computer technology into appropriate courses in a carefully chosen sequence. The aspects of computer technology which will be infused are the following:
    - making computers ACCESSIBLE to individuals who have physical and/or sensory impairments (selecting and using adaptive inputs and adaptive outputs, and the supporting peripherals and software;

- using computer-assisted instruction (CAI) with handicapped students (selecting appropriate tutorial, drill and practice, problem solving, and simulation programs, and using instructional shell programs and mini-authoring programs to create CAI lessons)
- using WORD-PROCESSORS and selected UTILITIES (such as a spelling checker) as adaptive aids for learning disabled students.
- enhancing the COMMUNICATION ABILITIES of physically disabled, mentally retarded, and multiply handicapped individuals through the use of electronic alternative communication systems.
- using computer-managed instruction (CMI) with handicapped students to aid in educational assessment and the development of individualized educational programs.
- utilizing ELECTRONIC NETWORKS to access the latest information on computer technology for the handicapped.
- staying abreast of the LATEST DEVELOPMENTS in technology which might have practical applications for disabled people in the future, such as laser discs and robotics.

2. To enhance the PRESENTATION of subject matter in Special Education courses by creating customized CAI programs (with the aid of an authoring system) and incorporating them into selected courses.

RELATIONSHIP OF PROJECT GOALS TO PRIORITIES OF INSTITUTION, DEPARTMENT, AND DISCIPLINE

The proposed project fits squarely in the College's priorities of supporting and improving its programs of instruction to ensure that students are "offered knowledge which is current with the latest research and development," and of utilizing advanced technology "to strengthen...its academic programs" (Statement of Goals and Fiscal Year 1986 Objectives).

Improving the quality of life of handicapped people through creative applications of computer technology is a primary focus of the field of Special Education today, but concern is widespread that colleges and universities are not adequately preparing future teachers for this task (Hutinger & Gentry, 1986). The results of the Department of Special Education's 5-Year Program Review in May 1986 pointed to the need to address this issue here at Trenton State College (see letter from Dr. Valaida Walker, Outside Evaluator, in Appendix A).

MEANS OF ACHIEVING PURPOSE(S)

ACTIVITIES & TIMELINE - OBJECTIVE #1

1.1 Set up Project Advisory Committee (Project Director: June)

- 1.1.1 Locate 3 educators from the field (2 teachers, 1 administrator) who are using computer technology in Special Education, one handicapped adult who uses the technology, and one parent, and invite to serve on the Advisory Committee.
- 1.1.2 Invite Wilhelmina Gunther, Coordinator for Technology, N.J. Department of Education, Division of Special Education, to serve on the Advisory Committee.
- 1.1.3 Schedule two meetings of the Advisory Committee, one in October and one in May.

1.2 Department Retreat #1 (September)

- 1.2.1 Plan details and agenda of Department Retreat (Project Director; August)

1.2.2 Discuss and revise list of student competencies (see Appendix B). (Project Faculty & Consultant; September)

1.2.3 Match courses with specific competencies and determine the sequence for introducting the technology competencies into courses (Project Faculty; September)

1.2.4 Delegate specific responsibilities for the development of each learning module (demonstrations and hands-on assignments) (Project Director; September)

1.2.5 Meet weekly to discuss and refine decisions made at Retreat (Project Faculty; On-Going)

1.3 Acquisition of Project Resources and Equipment

1.3.1 Arrange for Library to purchase books and subscribe to journals which focus on computer technology for the handicapped (see Appendix C for List of Titles to be Requested). (Project Director & Graduate Assistant; June).

1.3.2 Place orders for hardware, software and peripherals (see Appendix D for Annotated List of Software Possibilities). (Project Director, Graduate Assistant; August)

1.3.3 Add new hardware, software and peripherals to the Special Education Technology Resource Room (Forcina Hall 318), index them, and organize a system for monitoring their use (Graduate Assistant; As items arrive).

1.4 Create supporting materials for instruction (Project Faculty; October - April).

1.4.1 Review relevant literature, and practice using hardware and software (Project Faculty; October - November)

1.4.2 Create six learning modules which include demonstrations by faculty and hands-on activities for students (Project Faculty; December - April).

1.4.3 Develop a videotape/disc which will demonstrate "best practices" by showing real handicapped people using and benefitting from the various applications of computer technology listed under Objective #1.

- 1.4.3.1 Discuss details with Media Center (Project Director; June)
- 1.4.3.2 Make contacts with schools and with disabled adults who are benefitting from the technology (Graduate Assistant; October).
- 1.4.3.3 Visit the selected persons and/or programs and plan details of taping (Project Faculty, Graduate Assistant and Media Center; October - November).
- 1.4.3.4 Videotape the persons and/or programs using the technology (Media Center & Graduate Assistant; November - December).
- 1.4.3.5 Edit the tape (Project Faculty, Graduate Assistant and Media Center; January - March)
- 1.4.3.6 Transfer from 3/4" to 1/2" videotape or disc (Media Center; April)

1.5 Field test the learning modules and videotape/disc (Project Faculty; February - May)

1.6 Revise the selected courses to reflect the inclusion of the technology modules.

1.6.1 Revise target course outlines to include the revisions resulting from above activities (Project Faculty; February - March).

1.6.2 Initiate the process of getting Department, School and College approval of revised course outlines. (Department Chair; March).

1.7 Develop and distribute Project Dissemination Packets (Project Director and Graduate Assistant, February - May).

1.8 Evaluate Objective #1 according to the Project Evaluation Plan (see page 5). (Project Director and Outside Evaluator; On-going and May-June 1988).

1.9 Teach the revised courses, requiring students to complete the learning modules developed under this Project (Department Faculty; Following year).

ACTIVITIES & TIMELINE - OBJECTIVE #2

2.1 Select and order Authoring Systems (Project Faculty; June).

2.2 Identify and validate competencies regarding the use of authoring systems by College professors (Project Faculty & Project Consultants, August - September).

2.3 Department Retreat #2 (October)

2.3.1 Provide intensive training to Project Faculty on use of authoring system to write CAI programs for undergraduates (Project Consultants)

2.3.2 Select 2 topics within specific courses as targets for the development of customized CAI programs (Project Faculty)

    2.3.3 Match topics chosen with faculty expertise, and delegate responsibility for developing the customized CAI programs (Project Director)

2.4 Use the authoring system to develop CAI programs for undergraduates. (Project Faculty; November - April).

2.5 Department Retreat #3 (Project Faculty; February)

    2.5.1 Present progress reports on customized CAI programs.

    2.5.2 Problem-solve and plan revisions of the CAI programs.

2.6 Field-test the customized CAI programs in targeted undergradute courses (Department Faculty; April - May).

2.7 Evaluate Objective #2 according to the Project Evaluation Plan (see page 8). (Project Director & Outside Evaluator; May - June 1988).

2.8 Teach the selected courses, utilizing the CAI programs (Department Faculty; following year).

IMPACT ON STUDENTS

Number of students affected: During the initial year of the project, 75% of undergraduate Special Education majors, that is, 68 future teachers of handicapped children, will benefit from the activities of this project. It is anticipated that within two years every undergraduate Special Education major will have been affected, all 90 students in at least two courses; and within four years it is estimated that over 200 students will have benefitted from project activities.

The extent of the impact is far reaching. It is expected that the Department of Special Education will be turning out teacher candidates who will meet challenges in the special education classroom with an in-depth

SWITCH BUILDING WORKSHOP

1. Hand out switch kits.

2. Have students remove only the buzzer and battery.

3. Discussion of simple switches-
   Demo of disconnection of battery (cut wire anywhere).
   Point out the air gap.

4. Discuss the energy flowing through the wires similar to water through a hose.

5. Discuss connecting the wires directly to switch.

6. Demonstrate how connecting alligator clips to each wire and switch lead will save time for this workshop and future experimentation. **(When using LOW VOLTAGE DC CURRENT ONLY !!!)**

7. Have each student separate their pieces and place them on their templates.

8. Discuss each switch - how it operates, how it can be used and where you could find or buy them. (Refer to page 3).

9. Discuss easy connections to toys and battery operated devices using 1/8 miniature plugs.

10. Use miniature plugs to provide easy connection and disconnection between battery and device.

11. Have each group of students connect each switch again using the female plug connected to the buzzer and the male plug and alligator clips temporarily to each switch.

Demonstration of the 9 pin Joystick extenders.

Demonstration How it connects to the Apple computer

Demonstration How to cut the female end off, saving approx. 5 to 12 inches for future projects.

Discussion : There is no standard wire color code for the pin connections.

Pin number 1 - Switch #1
Pin number 2 - +5 volts
Pin number 3 - Ground
Pin number 4 - Paddle #2
Pin number 5 - Paddle #0
Pin number 6 - Switch #2
Pin number 7 - Switch #0 or Open Apple
Pin number 8 - Paddle #1
Pin number 9 - Paddle #3

Demonstration : How we can use the battery and buzzer to find which color wire is connected to which pin number 2 (+5), pin number 5 (Paddle #0), and pin number 8 (Paddle #1).

1 . Connect one wire lead from the buzzer to pin #2 on the Joystick extender. (*Note* You may have to have someone hold it. **BE SURE YOU ARE ONLY TOUCHING ONE PIN OTHERWISE YOU MAY RECEIVE A FAULTY READING ON THE CORRECT WIRE)**

2. Using the other lead from the buzzer, touch the end of each wire until you hear the buzzer. You may have to strip off some insulation to get at the bare wire. After hearing the buzzer and checking that all connections are correct, you can be sure that color wire connects to pin #2. Strip off approx. **1/2 inch**. to expose a section of bare wire.

PIN #2 = WIRE COLOR ____________________

3. Repeat instruction #2 to isolate the color wire for pin 5 (Paddle #0) and pin 8 (Paddle #1).

PIN #5 = WIRE COLOR ____________________

PIN #8 = WIRE COLOR ____________________

4. Using your alligator clips and any switch, make a circuit going from pin 2 to either pin 5 or pin 8, on your joystick connector.

5. Plug the other end of the joystick extender into the Apple computer in the front of the room and test out your switch.
Did the computer respond with the correct paddle number ? (Note: refer to the Pin chart on this page.) YES NO . If no, check your wires.

6. If time permits, re-wire the switch to control Paddle #1

PUSH OFF/ON SWITCH

Is this switch a Normally Open or Normally Closed (circle one or both)

Page number in Radio Shack catalog ________

How could this switch be used ? ____________________________________

____

MOMENTARY SWITCH

Is this switch a Normally Open or Normally Closed (circle one or both)

Page number in Radio Shack catalog ________

How could this switch be used ? ____________________________________

____

ROLLER LEVER SWITCH

Is this switch a Normally Open or Normally Closed (circle one or both)

Page number in Radio Shack catalog ________

How could this switch be used ? ____________________________________

____

MERCURY SWITCH

Is this switch a Normally Open or Normally Closed (circle one or both)

Page number in Radio Shack catalog ________

How could this switch be used ? ____________________________________

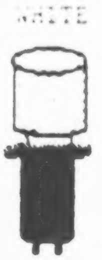
____

1/8 " PLUG

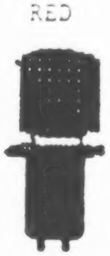
Page number in Radio Shack catalog ________

How could this jack be used ? ____________________________________

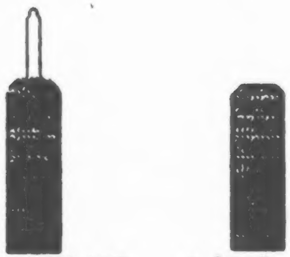
SWITCH-MAKING KIT TEMPLATE



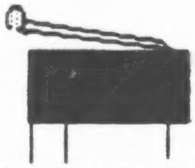
PUSH ON /OFF
SWITCH
CAT. NO. 275-011



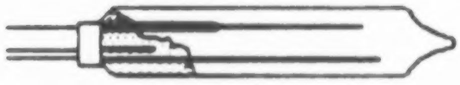
MOMENTARY
SWITCH
CAT. NO. 275-609



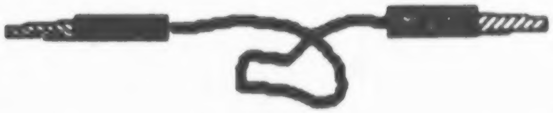
1/8 " PLUG 1/8 " PLUG
CAT. NO. 274-283



ROLLER LEVER SWITCH
CAT. NO. 275-017



MERCURY SWITCH
CAT. NO. 275-027



2 14" COLOR CODED JUMPER CABLES
CAT. NO. 278-1156

PLASTIC GUARD TUBE
FOR MERCURY SWITCH

KIT NUMBER_____

COMPUTERS IN SPECIAL EDUCATION CURRICULUM
SWITCH-MAKING KIT CONTENT CHECK LIST

ITEM	DATE														
1 Assembled Buzzer Switch (Battery & Holder w Blk & Wht Leads)															
1 Momentary Switch															
1 Push On/Off Switch															
1 Lever Switch (Black Rectangle)															
1 Mercury Switch															
1 Set Mini Jacks (Black Cylinder)															
2 Alligator Clip Sets															
1 Joy Stick Extender (Black Cord)															
1 Wire Stripper															

Assignment

1. Think of a handicapped child or adult who might need a switch to control a toy or computer.

2. Make a switch you feel is appropriate for this person and attach it to either a toy, battery operated radio, tape player, or any battery operated device. (Note: to use a portable tape recorder it should have a remote pause. To use this pause to turn on and off the tape you will have to wire your switch to a sub-miniature jack.

3. If you wish to use the Apple computer and the Adaptive Firmware Card,connect your switch a male miniature jack plug.

4. Write a short narrative discussing how you chose your **subject, switch** and the **device or application** it will interface with. Please include the following information.

   A. The cognitive performance level needed to utilize this switch and application.
   B. The physical performance level needed to utilize this switch.
   C. The physical abilties and limitations of your target person or group.
   D. Specific application such a switch would benefit.
   E. Other applications or uses for this switch.
   F. Also include any problems you encountered **building the circuit** or deciding on **proper placement, type of switch** or **application**.

The **solder tape**, found in your switch making kit, is available for your use when you make your circuit.

How to use solder tape:

1. Twist together the wires you wish to connect.

2. Bend the solder tape over the connection.

3. Heat with a match.

4. Apply more solder tape again, if needed, and heat.

Demonstration : Battery interupter

TRENTON STATE COLLEGE
DEPARTMENT OF SPECIAL EDUCATION

COMPUTERS IN THE SPECIAL EDUCATION CURRICULUM: PREPARING TEACHERS OF THE HANDICAPPED FOR TODAY'S TECHNOLOGY

EVALUATION - SWITCH WORKSHOP AND ASSIGNMENT

MAY 1987

Rate the quality of the switch workshop by responding to the following statements:	Strongly Agree	Agree	No Opinion	Disagree	Strong Disagr
1. The information was clearly presented.	1	2	3	4	5
2. The workshop stimulated my interest in adaptive switches.	1	2	3	4	5
Rate the effectiveness of of the switch-making assignment by responding to the following statements:					
3. The assignment contributed to my understanding of the material.	1	2	3	4	5
4. I could construct an adaptive switch for a child in my classroom.	1	2	3	4	5
5. On a scale of 1(low) to 5 (high) rate the general quality of the hands-on workshop.	1	2	3	4	5

6. What additions or changes would you recommend for the presentation of material regarding the use and construction of adaptive switches?

LONG ISLAND UNIVERSITY

Joel Mittler
School of Education
C.W. Post Campus, Long Island University
Brookville, NY 11548

Phone: 516-299-2373

SpecialNet: LONGISLAND.UNIV

Number of special education students:

Undergraduate: 50   Graduate: 1000

Program Description:

C.W. Post has an established program of summer institutes for training special education teachers to use technology.

LONG ISLAND UNIVERSITY
C. W. Post Campus
Faculty of Education

EDU 696A UTILIZING THE MICROCOMPUTER IN SPECIAL EDUCATION

Dr. Joel E. Mittler (516) 299-2373
Office 33, Library

Course Overview

This course is designed to introduce the student to the variety of applications of computer technology to handicapped individuals and their teachers in the field of Special Education. The computer will be discussed as an adjunct in the instruction of handicapped learners as well as an aid in their daily functioning. A variety of hardware and software will be reviewed. An integral part of this course will be related hands-on experiences.

TEXT Behrmann, Michael (Ed.) (1984). Handbook of Microcomputers in Special Education. San Diego: College Hill Press.

COURSE OUTLINE

1. Introduction to course, requirements, history. The components of the computer system reviewed.

2. Computers and Special Education - Overview of the uses of the computer with handicapped individuals; theoretical basis for use of the computer; introducing and using the computer in the classroom; using the computer to different populations.

   Read: Chapter 1

3. Computers and Assessment - Review of criterion and norm-referenced testing; formal and informal assessment; using the computer to perform assessment, computer-generated results; review of assessment software; preparing your own assessment.

4. IEP Preparation and the Computer - Components of the IEP; advantages and disadvantages of using the computer; using the computer for each component; selecting goals and objectives; reviewing IEP writing software.

5/6. Computer-Assisted Instruction - Types of computer-assisted instruction; review of different kinds of software. Other uses of computer-assisted·instruction; modifying existing software; designing your own instructional lesson; software for different populations.

   Read: Chapters 3, 5, 6, & 7

7. Computer-managed Instruction - Types of data available; use of data in the instructional process; adding data collection to existing programs.

Read: Chapter 8

8. Computer-managed Instruction (continued) - Designing your own instructional plan with data collection; authoring systems.

9. Computer Literacy for the Handicapped - The training of handicapped students in computers.

10. Alternate Computer Languages and Special Education - Introduction to LOGO.

11. Computers and Special Education Administration - Review of available software; modifying software for individual use.

12. Computers and Special Handicapping Conditions - The computer as a prosthetic device; using the computer with the physically handicapped.

Read: Chapter 11

13. Computers and Specific Handicapping Conditions (continued) - Using the compute with the language impaired, blind, deaf.

Read: Chapter 12

14 The New Technologies and Special Education

COURSE REQUIREMENTS

I. Regular attendance and participation

II. Reading assignments (text plus additional articles)

III. Three brief reaction papers (to be discussed)

IV. Select a disability group from the following list:

Learning Disabled
Mentally Retarded
Physically Handicapped
Visually Impaired
Auditorally Impaired
Emotionally Disturbed
Other (discuss with instructor)

In a well written, typewritten paper -

1. Prepare an analysis of the learning characteristics of that group.

2. Describe special hardware or hardware modifications that are especially appropriate for use with this population. Discuss applications of this hardware to meet the characteristics of the population.

3. Describe special or traditional software that is appropriate for use with the population. Discuss applications of software to meet the learning characteristics of the population.

4. Be prepared to present the information to the class.

V. Final examination.

EDU 696A   Dr. Joel Mittler

MICROCOMPUTERS AND SPECIAL EDUCATION

PRINT RESOURCE

Byte

Closing the Gap

Compute

Computer Classroom News

Computerworld

Computing Teacher, The

Creative Computing

Educational Computer

SO Micro

Electronic Education

Electronic Learning

InCider

InfoWorld

Journal of Computer-Based Instruction

The Mathematics Teacher and the Arithmetic Teacher

Microcomputers in Education QUEUE

Nibble

PC

Personal Computing

Popular Computing

Softalk

LONG ISLAND UNIVERSITY
C.W. POST CAMPUS
SCHOOL OF EDUCATION

FINAL EXAM

EDT 770 *Dr. Joel Mittler*

You have recently been hired as the Coordinator of Special Education Technology for a large suburban school district. Within this district there is a representative group of youngsters with handicapping conditions. The Superintendent of Schools has asked you to prepare a paper which he can take to the School Board to argue for financial support for Technology in Special Education.

Prepare a first draft of this paper. Include your philosophy of Special Education Technology as well as a discussion of the hardware and software needs for this district. Be sure to include some of your ideas on helping the existing Special Education teachers use the materials you obtain.

STATE UNIVERSITY COLLEGE AT BUFFALO

Sharon Cramer
State University College at Buffalo
1300 Elmwood Ave
Buffalo, NY 14222

Phone: 716-878-4334

Number of special education students:

Undergraduate: 300   Graduate: 500

Program Description:

Faculty at Buffalo have formed an Ad Hoc Computer Committee that is promoting the development of a technology training program. At present, technology is infused into some special education courses. Graduate students can take a special education technology course.

STATE UNIVERSITY COLLEGE AT BUFFALO
Exceptional Children Education Department

COURSE PROPOSAL

I. Course Number and Title:

EXE 5__ - Microcomputer Applications in Exceptional Education

II. Reasons for Addition:

It is clear that computers are an integral part of our educational system and their impact has been and will continue to be significant. With the expanded use of computers and, particularly, applications of microcomputers, remarkable advances have occurred for handicapped people directly and for teachers, therapists and others who work with handicapped children or adults. Examples of these developments include: computers that transcribe text into braille; those that allow non-vocal individuals to "speak" so that they can communicate with others; software programs that allow teachers to develop and update Individualized Educational Programs (IEPs) which are mandated federally for all handicapped individuals between the ages of 3 and 21; and programs that teach basic skills in small increments while including the elements of for effective instruction.

Moreover, the microcomputer, is a teaching tool which is extremely well-matched to the cognitive, affective and psychomotor characteristics of many individuals who have been labeled as handicapped or disabled. For instance, in the affective domain, many students with learning disabilities or mild mental retardation have developed very poor self-concepts by the time they enter a special education situation - often as a result of failure in regular education settings. The use of well-designed software programs can relieve these students of the performance pressure she or he would encounter in other classroom situations such as a reading group or even direct one-to-one instruction by the teacher. Computer programs can provide feedback as to whether the student is correct or not, present information in small increments, present tutorial exercises on the same material without losing patience, reward correct responses in a behavior modification mode and elminate any possibility of judgment during the learning process.

It is clear that Exceptional Education teachers need to feel comfortable with computers and to learn how to use them for the advantage of their students and themselves. Many teachers in Western New York have computers available to them and their students but do not take advantage of their potential due to their lack of background and experience with computers or a fear of the unknown. This course will allow professionals who work with handicapped children or adults to become comfortable with microcomputers and to achieve a level of expertise in their use.

III. Major Objectives: (unordered)

Students will be able to:

1. Discuss the technological advances that created the evolution of computers from the abacus to large mainframes to the portable microcomputers that are used in Exceptional Education classrooms today.

2. List and discuss a variety of augmentative input / output - devices that are currently available for handicapped individuals.

3. State the major difficulties involved in the early development and distribution of software programs that were designed specifically for handicapped individuals.

4. Discuss the most frequent characteristics of software programs that are developed and/or modified for handicapped individuals.

5. Define the differences between the concepts of computer literacy and computer proficiency and be able to select and verbally defend one of the concepts.

6. Compare and contrast the stereotypic, emotional reactions of young vs. older handicapped individuals concerning their willingness to operate microcomputers.

7. Identify and describe the main components of a microcomputer and explain the importance of appropriately maintaining the system.

8. Differentiate between effective and ineffective computer assisted instruction (CAI) as it relates to students with learning problems.

9. Describe at least three different systems of computer-managed instruction (CMI) for exceptional learners and identify positive and negative aspects of each.

10. Evaluate at least five different software items according to evaluation criteria presented in class.

11. Evaluate at least five different hardware components or peripheral devices for adapting microcomputers for handicapped learners according to evaluation criteria presented in class.

12. Define authoring systems, describe how they can be of assistance in developing instructional experiences for handicapped learners and compare at least two different systems.

13. List at least 6 local, state and national resources concerned with microcomputer applications with handicapped persons.

14. Describe at least three different computer adaptations that can be used to augment receptive and/or expressive communication for non-vocal individuals or those with limited vocal abilities.

15. Describe characteristics of microcomputers which have potential for remediating cognitive, affective or psychomotor deficits in handicapped children or adults.

16. Define the various types of telecommunication systems that are currently available for use by handicapped individuals.

17. Itemize and discuss the major points that should be considered before investing in a telecommunications system.

18. Develop an itemized list of anticipated and unexpected complications that should be considered before establishing a microcomputer laboratory for handicapped individuals.

19. Identify the characteristics of computer-based games and simulations that are effective with handicapped learners.

20. List probable future developments and trends in applications of microcomputers which may effect the education or daily living of handicapped individuals.

IV. Topical Outline

A. History of microcomputer development with specific focus on the handicapped:

1. From mainframes to minis to microcomputers as a result of modern technology.
2. Increasing flexibility of computer input/output - devices for the handicapped.
3. Initial difficulty in locating computer software that had applications for handicapped individuals.
4. Later difficulty providing evaluations of software programs for the handicapped to the people who needed them.

B. Current issues concerning use of computers:

1. Concept of computer literacy vs. computer proficiency.
2. The enthusiastic young vs. the cautious adult.
3. Ten creative excuses for not finding time to become acquainted with my "user-friendly" computer.
4. Time commitment required to become acquainted with computer programs.

C. Introduction to main components of a microcomputer system:

1. Identify and describe input/ output- devices and the central processing unit (CPU).
2. Explain the appropriate use and maintenance of a microcomputer system.

D. Current application of microcomputers in the area of Exceptional Education:

1. Applications with individuals who are classified as having learning/behavioral disorders:
    a) Advantages of microcomputers.
    b) Use of LOGO software to teach abstract concepts.
    c) Use of microcomputer for drill and practice.
    d) Use of audio and visual input devices for individualizing instruction.

2. Applications with individuals who are classified as having mild and/or moderate mental retardation:
    a) Advantages of microcomputers.
    b) Effective use of drill and practice.
    c) Advantages of using the microcomputer as a tutorial aide.
    d) Use of the microcomputer for educational simulations.

3. Applications with individuals who are classified as having physically handicapping conditions:
    a) Advantages of microcomputers.
    b) Input devices
        1) Use of individualized computer switches.
        2) Use of pointing devices for computers.
        3) Use of voice recognition.
    c) Output devices
        1) Use of video screen to enlarge print.
        2) Use of software programs to enlarge the printed or hard copy.
        3) Use of Morse Code for telecommunications.
        4) Use of electrical devices and robotics to control the environment.

4. Applications with individuals who are classified as having visual impairments:
    a) Advantages of microcomputers.
    b) Printed text to voice.
    c) Computer text to voice.
    d) Computer text to Braille.
    e) Enlargement of text.
    f) Devices to assist mobility.

5. Applications with individuals who are classified as having auditory impairments:
    - a) Advantages of microcomputers.
    - b) Use of electronic bulletin boards to communicate with hearing individuals.
    - c) Use of telecommunications via microcomputers to increase written language skills.
    - d) Use of telecommunications to develop oral skills that are based on an increased written language base.

6. Applications with individuals who are classified as gifted:
    - a) Advantages of microcomputers.
    - b) Developing decision-making skills.
    - c) Development of independent learning skills.
    - d) Use of computer simulations to develop a discovery approach to learning.
    - e) Using LOGO and BASIC to develop thinking skills.

D. Use of the microcomputers for instructional purposes in Exceptional Education:

1. Collection and analysis of student data:
    - a) Development of criterion referenced tests.
    - b) Development of task analyses.

2. Evaluation of Individualized Education Programs (IEPs) based upon a handicapped individuals needs and/or abilities:
    - a) Provide a variety in input/output - modes.
    - b) Provide appropriate feedback and reinforcement.
    - c) Provide self-paced instruction that is personalized.
    - d) Advantages of microcomputers over traditional methods.

E. Utilization of microcomputers in Exceptional Education Management:

1. Types of software available.
2. Value to teachers and administrators.

F. Evaluation of computer assisted instruction (CAI) software in Exceptional Education:

1. Importance of evaluating software programs for the handicapped.

2. Locating sources that evaluate software for the handicapped:
    - a) Local user groups.
    - b) Local school district committees.
    - c) Published directories.
    - d) Professional valuation centers in the Exceptional Education area.

3. Points to consider when evaluating software programs in Exceptional Education:
   a) General categories for all software programs.
   b) Evaluation criteria for educational and instruction-software programs.
   c) Evaluation criteria for utility programs.
   d) Evaluation criteria for recreational programs.
   e) Evaluation criteria for environmental and self-help programs.
   f) Evaluation criteria for measurement and data based programs.

4. Concept of ordering software on an approval basis:
   a) Evaluation by teachers, administrators and other professionals.
   b) Classroom evaluation of students' performance.

G. Hardware Evaluation:
   a) Quality and durability of the equipment.
   b) Availability to interface with other computers and peripherals.
   c) Ability of service centers and their cost.

H. The value of authoring systems and languages for teaching programs in Exceptional Education:
   a) Importance of authoring systems for handicapped individuals.
   b) Creating interactive software programs to meet individual needs.
   c) Significance of Apple Pilot, Super Pilot, E-Z Pilot and Author I software programs.

I. Telecommunications available for exceptional individuals:
   a) Points to consider before making a major investment.
   b) Use of micromodems for electronic mail.
   c) Types of modem programs available for Exceptional Education.
      1) SpecialNet.
      2) Telecommunication devices for the deaf (TDD).
   d) Personnel and cost considerations.

J. Considerations for developing a computer lab for Exceptional Education classroom use:
   a) Hardware/software considerations.
   b) Electrical/security considerations.
   c) Anticipated/unexpected costs.
   d) Administrative considerations.

K. Future of microcomputers in the Exceptional Education area:
   a) Integrated software for the handicapped.
   b) Interactive video discs and their use in Exceptional Education.
   c) Robotics and the handicapped.

UNIVERSITY OF AKRON

Dale Coons
University of Akron
119 Carroll Hall
Akron, OH 44325

Phone: 216-375-7779

Number of special education students:

Undergraduate: 150   Graduate: 100

Program Description:

The College of Education has a stand-alone technology course which is required of all education majors. The Dept. of Counseling and Special Education requires its majors to take a new spec. ed. technology course. The spec. ed. course may be elected for graduate credit.

TECHNOLOGY AND MATERIALS APPLICATION IN SPECIAL EDUCATION

5610:461/561

3 Semester Hours

PREREQUISITES: 5100:310 or permission of instructor

CATALOG DESCRIPTION: 1) micro-computer operation and programming skills in Special Education, 2) the operation and use of unique audio or visual tools for the handicapped and/or adaptive use of more traditional equipment and 3) an overview of commercial curriculum materials designed for the exceptional learner.

RATIONALE: The couse is intended to address not only an expanded focus in technological advances in education, i.e. the micro-computer, but also to examine those uses of audio-visual procedures specifically designed for Special Education. The course, in addition acquaints the student with the specialized curriculum materials designed for the exceptional learner. The addition of these components to program is necessary to meet existing mandates and to prepare graduates for changing educational practice.

OBJECTIVES:

1. To review basic operation and understanding of micro-computer and peripheral systems.
2. To provide the student with knowledge about commonly used commercial tape or disk programs in Special Education.
3. To develop a basic knowledge of simple programming skills in two languages, basic and logo.
4. To provide the student with an overview of the types and operation of commonly used audio and visual tools in Special Education.
5. To provide the student knowledge about the integration of audio and visual tools into the instructional program in Special Education.
6. To provide the student with a knowledge of specialized curriculum materials for exceptional learners.
7. To provide the student a rationale and strategy for integration of specialized materials into programs for exceptional learners.

COURSE OUTLINE:

I. Micro-Computers in Special Education

- A. History of micro-computer use in Special Education
- B. Identifying and Reviewing Commercially developed micro-programs commonly used in Special Education
- C. Source of computer software for use in Special Education Programs
- D. Developing software for micros
- E. Programming in Special Education
  1. Basic
  2. Logo
- F. Instructional Use in Special Education
  1. Remediation & Practice
  2. Introduce New Knowledge
  3. Problem Solving Tool
  4. Teaching programming skills to students
  5. Adaptive use for Physically Handicapped
  6. Adaptive use for Non-Verbal Individuals
  7. Creative use for Educational Programming

II. Educational Media & Equipment

- A. Identification of Educational Media and Equipment for Special Education
  1. Specialized Equipment
  2. Adaptive Use of Standard Equipment
  3. Limitations of Equipment & Machines
- B. Audio-Visual Packages
  1. Commercially developed for Special Education
  2. Teacher developed for Special Education
- C. Instructional use of Media & Equipment Strategies
  1. To respond to individual differences
  2. As an alternate response style for for students
  3. To compliment other teaching modes
  4. As a compensatory tool
  5. As a remedial tool

6. As an adaptive tool to compensate for deficit function

III. Specialized Methods and Materials

A. Identification and Evaluation of Materials for Mildly Handicapped
   1. Perceptual Readiness
   2. Reading
   3. Mathematics
   4. Language
   5. Social Studies
   6. Science/Health
   7. Problem Solving and Cognitive Development

B. Identification and Evaluation of Materials for Severely Handicapped
   1. Non-Verbal Communication
   2. Environmental Equipment
   3. Curriculum

C. Instructional Use of Specialized Materials
   1. Rationale for Use
   2. Integration With Traditional Materials
   3. Focus of Training

TEXT: None

STAFF: No additional staff necessary - can be taught by current faculty members.

kam
2/85

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5610:461/561

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EDUCATIONAL MEDIA AND TECHNOLOGY -- 5100:310

COURSE SYLLABUS including

CONTENT OVERVIEW

REQUIREMENTS

POLICIES

PROJECT GUIDELINES

Educational Media and Technology

Examines media technology including video, motion pictures, still pictures, audio materials, and computers in instructional settings with emphasis on selection/evaluation, utilization and preparation.

Educational Media Lab	Instructor:
Zook 335	Office:
Telephone: 375-7689	Telephone:

Objectives

The student will:

1. regard media technology as experiences that can involve the learner and result in learning.

2. state the characteristics and advantages of each of the commonly used media technology formats including opaque visuals, displays and learning stations, overhead projection transparencies, filmstrips and slides, audio recordings, microcomputer programs, and motion pictures (videotape and film).

3. state the instructional strategies used with motion pictures, projected still pictures, opaque visuals, overhead transparencies, audio recordings, and computer programs.

4. cite some of the sources of information about films, videotapes, filmstrips and slides, picture sets, audio recordings, and computer software.

5. state the rationale and guidelines for preparing instructional materials.

6. demonstrate competency in mounting opaque visuals, duplicating line drawings, lettering, and preparing overhead projection transparencies.

7. state the appropriate criteria used in evaluating motion pictures, projected still pictures (filmstrips and slides), opaque visuals, overhead transparencies, audio recordings, and computer programs.

8. evaluate films, videotapes, audio recordings, filmstrips, slide sets, and computer programs.

9. demonstrate competency in the operation of commonly used media equipment.

10. identify the criteria for each major mode of instructional computing placing emphasis on drill and practice, tutorials and simulations.

11. plan and apply strategies in using media materials to achieve selected objectives.

12. locate media materials and computer programs appropriate to stated curricular areas.

Required Text:

Lasher, Edward. *Preparing and Using Media Materials.* (Lexington, MA: Ginn Press, 1986).

Topics and Text Assignment:

Course topics are covered in the approximate order of appearance in this list. The page numbers next to teach topic refer to the textbook and are to be read before the topic is covered in class.

	Topics	Text Pages
1.	Course Orientation: Overview, Requirements, Facilities, and Policies	
2.	Nature of Communication	
3.	Roles of Media in Learning	1-2
4.	Behavioral Objectives and Pupil Audience Analysis	3-5
5.	Visual Materials: Advantages, Uses, and Evaluation	7-9
6.	Opaque Materials Preservation, Adaptation, and Preparation (including Mounting, Laminating, Lettering, Copying and Paste-ups)	11-19 and 24-43
7.	Learning Center/Display Design, Uses and Devices	45-54
8.	Projection Principles and Environmental Arrangement	58-64
9.	Opaque Projection	
10.	Overhead Projection: Characteristics, Applications, and Instructional Strategies	65-68
11.	Overhead Projection Transparency Design and Preparation	68-88
12.	Using Media Materials: General Strategies and Techniques	55-58
13.	Evaluating Media Materials: General Guidelines	95-100
14.	Audio Recordings and Audio-Tutorial Instruction: Applications, Instructional Strategies, Evaluation, and Recording Formats	101-108
15.	Preparing Audio Recordings	108-114
16.	Filmstrips: Characteristics, Application, Instructional Strategies, and Evaluation	117-119
17.	Slides: Formats and Characteristics; Applications and Instructional Strategies	119-122
18.	Preparing Slides and Copy Slides	123-127, 1132-140 & 148-151

	Topics	Text Pages
19.	Motion Pictures: Advantages, Characteristics, Applications, and Instructional Strategies	157-158 & 55-58
20.	Motion Picture Film Formats and Film Care and Presentation	158-163
21.	Video Formats and Equipment and Applications	164-168
22.	Motion Picture Evaluation	95-100
23.	Television: Closed Circuit, Cable, Educational TV, Public Broadcasting, Commercial Broadcasting	168-171
24.	Sources of Media Materials	89-94
25.	Equipment Evaluation	179-183
26.	Community Resources: Field Trips and Resource People	173-178
27.	Copyright	185-187
28.	Microcomputer Applications and Program Instruction Modes	
29.	Microcomputer Program Evaluation and Use	

COURSE REQUIREMENTS

You are responsible for the completion of all course projects in order to fulfill course requirements and receive course credit. In a number of cases, you have the opportunity to select projects of your choice from the project list. The subject matter of these projects is also your choice.

Two-thirds of your course grade is determined by the total number of points earned by projects. For increased flexibility, the four-point system will be replaced by an "eight-point system" where A = 8; A/B = 7; B = 6; B/C = 5; C = 4; C/D = 3; D = 2; and so on. Since some projects require more time and effort than others, a credit factor (listed next to each project) is multiplied by the grade earned. When your paper or project (requirement) is returned you may wish to convert its letter grade to its "eight-point-system" equivalent, multiply it by its credit factor and keep a running total of points. Comments on your project are related to the grade. If there is something you don't understand, please see your instructor.

Total Points Earned	Grade	Total Points Earned	Grade
260-280	A	170-184	C
245-259	A-	155-169	C-
230-244	B+	140-154	D+
215-229	B	125-139	D
200-214	B-	110-124	D-
185-199	C+	less than 110	F

Your presence at all or almost all classes will add points to your total, thus making it possible for you to receive a higher grade.

The course projects or requirements are directly related to class discussions and presentations, many of which are very difficult to make up if missed. Attendance is therefore important since you will still be responsible for course content and projects whether or not you miss any classes. Excessive absence from class will result in a grade of "F".

Projects or requirements are to be done by you and submitted on or before the due date listed. On all projects and papers submitted for credit, your name, the course and your section numbers, and the project number must be included. Projects submitted more than one class session late will receive a lowered grade (amount of grade reduction depends upon how late the project is submitted).

Project guidelines are to be used and followed when doing projects since it isn't possible to re-do projects for a better grade. When coming to the Educational Media Laboratory to do production projects, your book will be needed.

The last third of the final course grade is determined by your microcomputer project(s) (guidelines to be given at a later time).

If course requirements are not met by the last week of classes, the course grade will be an "F". If there are any reasons why you cannot complete the course requirements by the last week of classes you are urged to see your instructor before the last week, since an "Incomplete" can sometimes be submitted in place of a grade. University practice stipulates that an "Incomplete" not made up by the semester following the semester in which the course was taken will convert to an "F".

Proj. No.	Project Description	Credit Factor	Dates	Syllabus Guidelines Pg. No.	Notes
1	Permanent Rubber Cement Mount OR "Cold Mount"	1		7-8	
2	Dry Mount	1		7-8	
3	Lettering Project: Either "Speedball" OR "Dry Transfer"	1		7-8	
4	Computer Graphics Lettering	1		7-8	
5	Projection Tracing OR Black Line Paste-Up.	1		7-8	
6	Overhead Transparency: Acetate OR Transparency Lift (Transparencies are to be in Frame Mounts).	1		7-8	

Proj. No.	Project Description	Credit Factor	Dates	Syllabus Guide-lines Pg. No.	Notes
7	Overhead Transparency: Thermal or Dry Photocopy	1		7-8	
8	TEST 1	3			
9	Audio Recording Evaluation OR Filmstrip (silent or sound) Evaluation. Note: A Filmstrip is a series of still projected images--a slide sequence may be substituted since it also is a series of still projected images.	4		8	
10	Sound Motion Picture Evaluation	6		8	
11	Filmstrip, Slide Set or Copy Slide	1		9	
12	Major Project (Select ONE of the following):	7			
	Option A: Self-Instructional Learning Station/Display		*	9-10	
	Option B: Class Presentation		*	11	
13	Learn the operation of the following pieces of equipment: A. 16mm Motion Picture Sound Projector B. 35mm Filmstrip/Slide Projector C. 35mm Sound Filmstrip Projector D. Cassette Tape Recorder E. Overhead Projector F. Carousel Slide Projector G. Spirit Duplicator Machine H. Videotape Recorder and TV Camera NOTE: Use the Equipment Operation Proficiency Checklist obtainable at the Educational Media Lab.	None --but req'd			
14	TEST 2	7			
Microcomputer Project(s)					

*USE APPROPRIATE SIGN UP SHEET

MATERIALS PRODUCTION ERROR MESSAGES (Projects 1-7)

When your production projects (projects 1-7) are returned, they may have, in addition to the grade, a number or series of numbers. Each number represents a specific way in which the project may be improved. The meaning or message for each number is given below.

PLEASE NOTE: IF YOU USE THIS LIST WHILE DOING YOUR PROJECTS, AND CHECK YOUR PROJECTS AGAINST THIS LIST BEFORE HANDING THEM IN, YOUR PROJECTS WILL GENERALLY BE OF A BETTER QUALITY.

Error Message No.	Message Description
100	MOUNTING (Projects 1 and 2)
101	Adhesion not complete (air bubbles or wrinkles)
102	Visual not mounted straight or not centered
103	Tissue showing
104	Trimming ragged or not straight
200	LETTERING (Project 3)
201	Guidelines showing
202	Spacing inconsistent
203	Line inconsistency within letter
204	Letter style inconsistent
205	Word or words not centered
206	Letters, word or words not straight or out of line
300	PASTE-UP OR ILLUSTRATION REPRODUCTION (Project 4)
301	Guidelines showing
302	Lines not dark or heavy enough or inconsistent
303	Parts of paste-up may not reproduce well
304	Technique inappropriate to purpose
305	Illustration is to be permanent with marker or India ink
400	OVERHEAD PROJECTION TRANSPARENCY (Projects 5 & 6)
401	Symbols such as lettering should be larger
402	Symbols such as lettering should be spaced better or they should be better constructed, or they should be straighter
403	Too much detail; needs to be less crowded; perhaps some elements irrelevant to purpose
404	Visual material too close to frame edge
405	Line inconsistency
406	Exposure incorrect (Thermal)
407	Not centered or space not used well or overall image too small
408	Image not clear or bright enough (transparency lift)
409	Transparency incorrectly mounted
410	The transparency technique selected is appropriate to materials used
999	DIRTY VISUAL

Additional Guidelines for Projects 1-7 on next page.

GUIDELINES FOR PROJECTS 1-7 (continued

For Projects 1 and 2, include a sheet of paper taped to the back of each mount with your stated behavioral objective (see text, pp. 4 and 5) for each. The size of the visuals to be mounted is to be at least 8 x 10". Lamination for Projects 1 and 2 is not necessary.

Project 3 must consist of at least two words and a minimum of three letters in each of two words.

Project 4 may be the size of an 8½ x 11" "poster" or in the format of a greeting card and may include visual material.

In Project 5, the projection tracing is to be made permanent with marker or pen and India ink (see text, pp. 30-31). If you opt for the Paste-Up, make sure the parts along with your printed material contribute to a main purpose (see text, p. 31).

Each of your Transparency Projects (6 and 7) must be taped to a transparency frame mount and on each frame mount, tape a sheet of paper with your stated behavioral objective (text, pp. 4-5).

GUIDELINES FOR PROJECTS 7 AND 8
Nonprint Media Materials Evaluations

Whether you evaluate an audiorecording, sound or silent filmstrip or slide sequence, or motion picture, you are to use the format described in "Evaluation Guidelines" (pages 95-100 of the text). As stated, divide your evaluation into five sections. In Section II, state the specific purpose of the material as (a) behavioral objective(s). Before writing the fifth section of the evaluation, become very familiar with pages 55-58 of the text.

Sections IV and V are the most important parts of your evaluation. While Sections I and II are to be in "list" or "outline" form, Sections III, IV, and V must be in "paragraph" form. Your writing is expected to be clear and concise. A first draft is rarely suitable. When you think you are done, read over your entire paper carefully so that errors will be at a minimum.

The overall length of your evaluation, if typewritten, should be one or two pages. If it is more than two pages, read it again with the idea of making it more succinct; that is, shorter without losing your observations, points, or concepts.

GUIDELINES FOR PROJECT 9
Slide Set, Filmstrip or Copy Slide

If you opt for the slide set, prepare a set of 6-12 nonphotographic slides (see text, p. 120, for the choices and use the template in Appendix C). If you opt for the filmstrip, prepare a nonphotographic filmstrip of 8-16 frames (see text, pp. 116-117). The material available in the EML is the "write on" filmstrip, "U-Film". Use the template and follow the directions in Appendix B of the text.

If you opt to do the copy slide, you may use the "Ektagraphic Visualmaker" in the EML (see text, pp 146-147). For this class project only, the film will already be in the camera and the magicubes, available from an EML attendant. Make a note as to the film cartridge number (located on a piece of tape adhered to the camera) and the exposure number so that you will be able to identify your slide with little or no difficulty when it is ready to be picked up. Sometime after you shoot your Ektagraphic copy slide, the film will be developed and the resulting slides will be available at the main desk in the EML. When you pick up your slides, give the EML attendant the film cartridge number and exposure number. After you identify your slide, give the attendant your EML ticket and the cost of your slide will be taken from the ticket. (Unlike other EML supplies, you pay for the copy slide project after it is done.)

Whether you opt for the filmstrip, slide set, or copy slide, you do not hand it in to your instructor unless requested to do so. You get credit when you project it in class (the specific day will be announced by your instructor). Make sure you know how to load the slide tray (or thread a filmstrip projector), since your project grade is based on how your slide(s) or filmstrip appear on the screen.

GUIDELINES FOR PROJECT 10, OPTION A:
Self-Instructional Learning Station/Display

The learning station/display can take the shape of any format or combination of formats such as bulletin, flannel, hook and loop, magnetic, and electric boards, table tops, and ceiling suspensions, and can cover any topic or subject area. It must be designed to achieve stated objectives, to attract and hold the attention of the student, and to result in some learning, either of a skill, attitude, or cognitive process. This project is to be designed for independent use. It is to be a self-instructional device that will involve the student through exploration. Guidance/directions can be provided by an audiocassette tape or written instructions, depending upon the student for which it is designed.

Continued on p. 10

Use the Learning Station Sign-Up Sheet to determine the date your learning station will be set up. On the day you are scheduled to show your learning station to the class, arrive a little early and set it up before class starts. Make sure you have all necessary items (e.g., thumbtacks). A variety of display boards will be available in the classroom. If you need any equipment, such as a tape recorder, as part of your learning station, you can obtain it by submitting a paper to your instructor, at least one class session before you are scheduled to show your project, with the following information: your name, the date you will be showing your learning station, and the piece or pieces of equipment you want.

On your "show day," submit a short paper to the instructor which includes the following points:

1. Student's name and project number.
2. Title of learning station/display.
3. Objective(s) of learning station/display written in student behavioral terms.
4. Brief description of the student for which the learning station/display is intended.
5. Any other information which you feel is important.

You will have a few minutes to show your project to the class, relating the objectives and the background of the student for which it is designed. We will then discuss the project so that others may become aware of the design and techniques used.

Specifically, evaluation considerations include:

1. Achievement of objectives as stated in your paper. For example, the amount of content depth should be greater for secondary level students than for elementary level students.
2. Appropriateness of format (or formats) to objectives and defined audience or class as stated in your paper. For example, directions for preschool, most primary level, and other relatively unsophisticated readers should be on audiocassette rather than printed instructions.
3. Quality and appropriateness of materials displayed to objectives and defined audience or class as stated in your paper. For example, objects and other materials to be manipulated by very young students should not be too small. Similarly, the space(s) provided for printed responses need to be larger for young students.
4. Overall viewer involvement (physical and/or intellectual) and the extent to which the learning station/display is self-instructional; that is, the extent to which it is usable on an independent basis.
5. Effectiveness of arrangement of materials (use of design principles).

GUIDELINES FOR PROJECT 10, OPTION B:
Class Presentation

The class presentation is an activity in which the class will assume the role of your choice as student or audience, and you will be the teacher or presenter. This activity is to be a maximum of 15 minutes. It may be in any area or subject of your choice. If the presentation is complex (use of combination of media or other situation making good pace and timing difficult), you may fulfill this requirement with another student and make the presentation as a team. The presentation must involve the use of media. You may use any materials available to reach your goals. Since the presenter or presenting team is to be active, the use of programmed material (films, recordings) must be limited to one half the time of the total presentation.

To expedite proceedings and to help the class assume the desired role, include the following points on a sheet of paper which is to be given to the instructor before the presentation. This information should also be given to the class as an introduction to your presentation:

1. Student's name and project number.
2. Objective(s) of presentation written in student behavioral terms.
3. Role of the class such as age, grade level, subject area, and prerequisite knowledge or training.
4. Any other information the presenter considers important.

You will be responsible for ordering the equipment and materials needed. Equipment can be ordered by submitting a paper to your instructor, at least one class session before you are scheduled to present, with the following information: your name, the date you will be making your presentation and the piece or pieces of equipment you need. Materials such as audiorecordings, 16mm films, filmstrips, and filmloops can be obtained from Bierce Library's Media Resources Center. Since 16mm films have a high utilization rate, they should be requested at least two weeks in advance. On the day of your presentation, try to get to class a little early if possible and arrange the room, equipment and materials so that a minimum of class time is used for "setting up."

Following each class presentation, we will discuss the experience. It is hoped that strengths and effective techniques will be pointed out so that others may become aware of these methods and perhaps adopt them. Concrete suggestions for ways of improving the presentation may also be brought up at this time.

Specifically, evaluation considerations include:

1. Appropriateness of materials and media to objectives and defined audience or class as stated in your accompanying paper.
2. Quality and appropriateness of materials used.
3. Effectiveness of equipment operation.
4. Level of audience involvement.
5. Environment arrangement.
6. Familiarity with subject matter.
7. Achievement of objectives as stated in your accompanying paper.

OHIO UNIVERSITY

Barbara Reeves
McCracken Hall
Ohio University
Athens, OH 45701

Phone: 614-593-4488

Number of special education students:

Undergraduate: Graduate:

Program Description:

At Ohio University, faculty offer workshops at branch campuses on uses of computers in special education. On the main campus, special education students have the use of a microcomputer lab. Faculty have developed a module that is incorporated into an L.D, methods course

The use of computers in special education teacher training at Ohio University is in a state of flux, or to be exact, is experiencing an extended childhood. The beginning dates back to 1980, when one faculty member acquired a Radio Shack Color computer from a local civic group to use in a special summer project that involved learning disabled children. The teacher trainees became very interested in the various computer applications that were demonstrated for use in the classroom, and began to ask to use the computer. At this time, the major uses were word processing, grade calculations, and writing simple programs for drill and practice activities. Many students were "turned on" to computers and were able to use the one mentioned when it was available. Since that time there has been a dramatic increase in the availability of computers and interest on the part of the teacher trainees. While there is no formal systematic training of special education teachers in the uses of computers, attempts have been made toward the goal of developing such training.

Currently, all elementary education majors are required to take a computer course (EDM 332), but special education and secondary education majors are not required to take the course. However, many astute and interested students took the course and "spread the word" about how the course helped them in their personal productivity . Many of the students also stated that learning to use the computer helped them in their field experiences as most of the area schools had computers in the classrooms. When the interest surged and enrollments grew, many of the special education majors began to be closed out of the class. They then sought personal instruction from the one faculty member (me) in the department who was using computers. By this time, I had been **RETOOLED**, and was using Apples and IBMs that were widely available in the College of Education and the university. Flattered at first, it soon became apparent that the need for training was far more than I could handle. Still, I was unable to convince the other faculty that our students needed to take the EDM 332 course or that we needed coursework of our own.Attempts to solve the problem consisted of the following:

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As mentioned earlier, there is still no *required* course in computers for Special Education majors at Ohio University. There has been growth in the interest and availability of computers for students and faculty. The college has a computer lab that has over 20 stations with Apple computers, including the IIe, IIc and IIgs. There is a lab for faculty only that has Apple and IBM computers. In the Learning Lab (a component of the C.A.S.T.grant), there are four IIe stations, one IIc, one IIgs and a Mac Plus. Despite this technical support,there has been a delay in the approval of a course designed especially for Special Education majors. It is believed that a new course will be approved early in the fall quarter and be offered during the spring quarter. Hopefully, participation in this **RETOOL** roundtable will be helpful in gathering additional information to use in promoting the course approval.

EDM 332 / EDCI 532

Microcomputer Applications In Education

Course Outline

January	7	Overview of the Course
	12	Computer Uses in Education
	14	System Commands (1)
	19	Introduction to Programming (2)
	21	Branching (3)
	26	LOWRES Graphing (4)
	28	History of Computing
February	2	Loops (5)
	4	Software Survey
	9	Quiz QUAA
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	23	Software Survey
	25	Other Features of BASIC (7)
March	2	A Walk Through the Apple (Bits, Bytes & Nibbles)
	4	Other Language Options (Logo & Pascal)
	9	The Case Against Computers
	11	Summary
	18	Final Examination

COURSE

TITLE: The Special Education Teacher and The Microcomputer

INSTRUCTOR: DR. JUDITH A. FORTALEZA AND DR. BARBARA REEVES

DATES: Sept. 16, 1983 - 6:00 PM - 9:00 PM
17, 1983 - 9:00 AM - 4:00 PM
Sept. 23, 1983 - 6:00 PM - 9:00 PM
24, 1983 - 9:00 AM - 4:00 PM

CREDIT: 2 Credit Hours

LOCATION: Ohio University, Lancaster Branch

RATIONALE

Educators have found themselves in the midst of the "Technological Information Age" brought about by the development of the silicon chip. Presently, most educators are struggling to define their role in this new era. A serious lack of help for educators exists. Special Educators find themselves struggling for even more information in terms of how this information void can be addressed in terms of their specialized needs. This course is designed to address that need by providing information and practical experience to educators on how to implement computer technology in the classroom. Specific emphasis will be placed on the needs of special educators. Lecture, demonstration and hands on practice will all be included in the class format. Participants will be introduced to a universal knowledge of educational technology.

TOPICAL OUTLINE

CLASS #1

Introduction to the Microcomputer

A. The computer and related periphals will be demonstrated and discussed.

B. Participants will practice computer interaction.

Historical Perspective of the Computer

A. Brief description of the developmental changes of the computer will be discussed.

B. Future uses of computers will be presented.

CLASS #2

Uses of the Computer in Schools

A. Discussion of the use of computers in the Central Office will be presented with emphasis on management of special education information management.

B. Discussion of computers in the Principals Office will be presented.

C. Discussion of the use of the computer in the classroom will be presented with emphasis on serving the needs of the special education student.

Teaching with Computers

A. Introduction to Computer Assistive Instruction Software.

B. Introduction to Computer Management Instruction Software.

C. Introduction to using computer in assessment and test design.

D. Introduction to use of computers in classroom management activities such as record keeping and inventory.

E. Demonstration and evaluation of commercially available instructional software especially as it relates to the need of the special education student.

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VII. SPECIFIC OBJECTIVES: (PLEASE SEE APPENDIX A FOR RATIONALE AND NEED)

The three major goals of the proposed center are:

Goal 1.0 TO PROVIDE TRAINING IN THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS.

Goal 2.0 TO PROVIDE DIRECT SERVICES TO SPECIAL NEEDS STUDENTS, THEIR TEACHERS AND THEIR PARENTS.

Goal 3.0 TO CONDUCT RESEARCH ON THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS AND THE EFFICACY OF THIS PROJECT.

The specific objectives for these goals are:

Goal 1.0 TO PROVIDE TRAINING IN THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS.

Objectives:

1.1 To provide training for professionals in the uses of CAI, CMT, Word Processing, IEP generation and Special Net. (SEE APPENDICES D AND E)

1.2 To provide training for preservice special education students in IEP generation, Word Processing, CAI/CMI, drill and practice, classroom data management and using Special Net. (SEE APPENDICES D AND E)

1.3 To provide computer training opportunities for parents of special needs children.

Goal 2.0 TO PROVIDE DIRECT SERVICES TO SPECIAL NEEDS STUDENTS, THEIR TEACHERS AND THEIR PARENTS.

Objectives:

2.1 To implement a tutoring program called the Learning Lab using existing facilities for the academic year (September, 1985-June, 1986) that will join the summer Master Teacher Project (June - July, 1986). This lab will:

2.1.1 provide "hands-on" training for preservice special education

2.1.2 provide individual and small group tutoring to special needs children

2.1.3 provide area teachers with a computer lab facility and available software

2.1.4 provide computer lab facilities for parents to use with their children

2.2 To provide tutoring services to special needs children via the Learning Lab. This tutoring will be designed:

2.2.1 to help children compensate for handicaps by developing more effective strategies for learning problem solving and communication

2.2.2 to develop the child's skill in using the computer as a compensatory or augmentative tool

2.2.3 to remdiate specific skill weaknesses

2.2.4 to enhance the child's sense of general competence and mastery

2.3 To develop a library in the Learning Lab of computer materials and software for professionals, students and parents to use with special needs children. The purposes of this library will be:

2.3.1 to develop cooperative exchanges of computer software with area teachers and parents for use with special needs children

2.3.2 to gather and evaluate available software for special needs children

2.3.3 to recommend software for specific treatment and educational plans of children

2.4 To educate parents and professionals about the potential power (and potential misuse) of computer use with special needs children in order to help them become more effective consumers.

2.5 To acquire a subscription to Special Net in the Learning Lab for use by the College of Education faculty, students, teachers and parents.

Goal 3 TO CONDUCT RESEARCH ON THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS AND THE EFFICACY OF THIS PROJECT

Objectives:

3.1 To assess knowledge and skills in the use of computers by preservice trainees using pre and post test measures.

3.2 To measure learning gains made by children served in Learning Lab versus those not served.

3.3 To evaluate satisfaction and use of Learning Lab by parents and teachers.

3.4 To evaluate specific software effectiveness when used for remediation of specific problems.

3.5 To evaluate actual use of the project computers by professional using pre and post test measures.

3.6 To evaluate the efficacy of the project.

VIII. SPECIFIC PROCEDURES FOR MEETING OBJECTIVES:

The procedures for meeting the objectives are listed here as they will occur. Specific objective numbers are included in ( ) at the end of each procedure.

August 1985

1. Develop pre-test evaluation instruments (3.1, 3.5)

2. Redevelop course syllabus for EDSP 476/460 to include tutoring in the Learning Lab (1.2,2.1,2.2)

3. Design initial training workshops for faculty, professionals and parents (1.1,1.2, 2.4)

4. Contact consultants and set dates for initial training (1.1, 1.2, 2.4)

5. Purchase equipment to be furnished by Ohio University if proposal is funded (1.1, 1.2, 2.1, 2.3, 2.4)

6. Set up master plan for implementation of Learning Lab (2.1)

September - December 1985

1. Meet with area teachers to discuss purposes of C.A.S.T. and the Learning Lab - this will be a dinner meeting (1.1, 2.1, 2.2, 2.4)

2. Attend the fall meeting of the Special Education Parent Group of Athens to explain C.A.S.T. and Learning Lab (1.1, 2.1, 2.2, 2.4)

3. Establish a joint task force of professionals and parents to consult with the IRC and recommend software purchases for the Learning Lab (2.3)

4. Develop software evaluation forms (3.4)

5. Develop evaluation and data keeping forms for the proposed project (3.3)

6. Conduct initial training (1.1, 1.2, 2.4)

7. Hire part-time secretry, and student managers for Learning Lab (2.1)

8. Subscribe to Special Net and conduct training (1.1, 1.2, 1.3)

9. Administer instrument for measuring learning gains made by children and collect data for fall quarter (3.2)

January - March 1986

10. Continue to conduct training sessions (1.1, 1.3)

11. Continue operation of Learning Lab (2.1)

12. Purchase additional software as recommended by task-force (2.3)

13. Hold Learning Lab open house for community (2.1, 2.3)

14. Continue to collect data regarding use of lab by professionals, parents, and students (2.1, 2.3, 3.5)

March - June 1986

15. Hold dinner for teachers and parents to discuss progress of C.A.S.T. (1.1, 2.1, 3.1)

16. Continue to conduct training sessions (1.1, 1.3)

17. Continue operation of Learning Lab (2.1)

18. Change EDSP 476/460 syllabi as necessary, based on Fall quarter evaluation (1.2, 2.1, 2.2)

19. Purchase final software recommended by joint task force (2.3, 3.4)

20. Collect data on use of lab by various groups (2.1, 2.3, 3.5)

21. Collect data on learning gains made by children in Learning Lab for Winter and Spring Quarters (3.2)

22. Collect data to evaluate software effectiveness for specific problems (3.4)

June - July 1986

23. Continue to operate Learning Lab in the Master Teacher Project (2.1)

24. Collect data regarding efficacy of C.A.S.T. (3.1, 3.3, 3.5, 3.6)

25. Complete project report (3.6)

IX. EVALUATION ACTIVITIES:

To evaluate the C.A.S.T., data will be collected for Goal 3 and will be utilized to evaluate the project. The Director of the project will gather:

1. data regarding use of the Learning Lab (quantitative and qualitative)
2. data to evaluate children's learning gains
3. parent evaluation of training sessions and tutoring
4. data to evaluate computer literacy of students in preservice program (pre and post test)
5. data on software evaluations for specific learning problems
6. teacher evaluations of C.A.S.T.
7. faculty evaluations of C.A.S.T.

The use of computers in special education teacher training at Ohio University is in a state of flux, or to be exact, is experiencing an extended childhood. The beginning dates back to 1980, when one faculty member acquired a Radio Shack Color computer from a local civic group to use in a special summer project that involved learning disabled children. The teacher trainees became very interested in the various computer applications that were demonstrated for use in the classroom, and began to ask to use the computer. At this time, the major uses were word processing, grade calculations, and writing simple programs for drill and practice activities. Many students were "turned on" to computers and were able to use the one mentioned when it was available. Since that time there has been a dramatic increase in the availability of computers and interest on the part of the teacher trainees. While there is no formal systematic training of special education teachers in the uses of computers, attempts have been made toward the goal of developing such training.

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EDM 332 / EDCI 532

Microcomputer Applications In Education

Course Outline

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COURSE

TITLE: The Special Education Teacher and The Microcomputer

INSTRUCTOR: DR. JUDITH A. FORTALEZA AND DR. BARBARA REEVES

DATES: Sept. 16, 1983 - 6:00 PM - 9:00 PM
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CREDIT: 2 Credit Hours

LOCATION: Ohio University, Lancaster Branch

RATIONALE

Educators have found themselves in the midst of the "Technological Information Age" brought about by the development of the silicon chip. Presently, most educators are struggling to define their role in this new era. A serious lack of help for educators exists. Special Educators find themselves struggling for even more information in terms of how this information void can be addressed in terms of their specialized needs. This course is designed to address that need by providing information and practical experience to educators on how to implement computer technology in the classroom. Specific emphasis will be placed on the needs of special educators. Lecture, demonstration and hands on practice will all be included in the class format. Participants will be introduced to a universal knowledge of educational technology.

TOPICAL OUTLINE

CLASS #1

Introduction to the Microcomputer

A. The computer and related periphals will be demonstrated and discussed.

B. Participants will practice computer interaction.

Historical Perspective of the Computer

A. Brief description of the developmental changes of the computer will be discussed.

B. Future uses of computers will be presented.

CLASS #2

Uses of the Computer in Schools

A. Discussion of the use of computers in the Central Office will be presented with emphasis on management of special education information management.

B. Discussion of computers in the Principals Office will be presented.

C. Discussion of the use of the computer in the classroom will be presented with emphasis on serving the needs of the special education student.

Teaching with Computers

A. Introduction to Computer Assistive Instruction Software.

B. Introduction to Computer Management Instruction Software.

C. Introduction to using computer in assessment and test design.

D. Introduction to use of computers in classroom management activities such as record keeping and inventory.

E. Demonstration and evaluation of commercially available instructional software especially as it relates to the need of the special education student.

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VII. SPECIFIC OBJECTIVES: (PLEASE SEE APPENDIX A FOR RATIONALE AND NEED)

The three major goals of the proposed center are:

Goal 1.0 TO PROVIDE TRAINING IN THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS.

Goal 2.0 TO PROVIDE DIRECT SERVICES TO SPECIAL NEEDS STUDENTS, THEIR TEACHERS AND THEIR PARENTS.

Goal 3.0 TO CONDUCT RESEARCH ON THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS AND THE EFFICACY OF THIS PROJECT.

The specific objectives for these goals are:

Goal 1.0 TO PROVIDE TRAINING IN THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS.

Objectives:

1.1 To provide training for professionals in the uses of CAI, CMT, Word Processing, IEP generation and Special Net. (SEE APPENDICES D AND E)

1.2 To provide training for preservice special education students in IEP generation, Word Processing, CAI/CMI, drill and practice, classroom data management and using Special Net. (SEE APPENDICES D AND E)

1.3 To provide computer training opportunities for parents of special needs children.

Goal 2.0 TO PROVIDE DIRECT SERVICES TO SPECIAL NEEDS STUDENTS, THEIR TEACHERS AND THEIR PARENTS.

Objectives:

2.1 To implement a tutoring program called the Learning Lab using existing facilities for the academic year (September, 1985-June, 1986) that will join the summer Master Teacher Project (June - July, 1986). This lab will:

2.1.1 provide "hands-on" training for preservice special education

2.1.2 provide individual and small group tutoring to special needs children

2.1.3 provide area teachers with a computer lab facility and available software

2.1.4 provide computer lab facilities for parents to use with their children

2.2 To provide tutoring services to special needs children via the Learning Lab. This tutoring will be designed:

2.2.1 to help children compensate for handicaps by developing more effective strategies for learning problem solving and communication

2.2.2 to develop the child's skill in using the computer as a compensatory or augmentative tool

2.2.3 to remdiate specific skill weaknesses

2.2.4 to enhance the child's sense of general competence and mastery

2.3 To develop a library in the Learning Lab of computer materials and software for professionals, students and parents to use with special needs children. The purposes of this library will be:

2.3.1 to develop cooperative exchanges of computer software with area teachers and parents for use with special needs children

2.3.2 to gather and evaluate available software for special needs children

2.3.3 to recommend software for specific treatment and educational plans of children

2.4 To educate parents and professionals about the potential power (and potential misuse) of computer use with special needs children in order to help them become more effective consumers.

2.5 To acquire a subscription to Special Net in the Learning Lab for use by the College of Education faculty, students, teachers and parents.

Goal 3 TO CONDUCT RESEARCH ON THE USES OF COMPUTERS WITH SPECIAL NEEDS STUDENTS AND THE EFFICACY OF THIS PROJECT

Objectives:

3.1 To assess knowledge and skills in the use of computers by preservice trainees using pre and post test measures.

3.2 To measure learning gains made by children served in Learning Lab versus those not served.

3.3 To evaluate satisfaction and use of Learning Lab by parents and teachers.

3.4 To evaluate specific software effectiveness when used for remediation of specific problems.

3.5 To evaluate actual use of the project computers by professional using pre and post test measures.

3.6 To evaluate the efficacy of the project.

VIII. SPECIFIC PROCEDURES FOR MEETING OBJECTIVES:

The procedures for meeting the objectives are listed here as they will occur. Specific objective numbers are included in ( ) at the end of each procedure.

August 1985

1. Develop pre-test evaluation instruments (3.1, 3.5)
2. Redevelop course syllabus for EDSP 476/460 to include tutoring in the Learning Lab (1.2,2.1,2.2)
3. Design initial training workshops for faculty, professionals and parents (1.1,1.2, 2.4)
4. Contact consultants and set dates for initial training (1.1, 1.2, 2.4)
5. Purchase equipment to be furnished by Ohio University if proposal is funded (1.1, 1.2, 2.1, 2.3, 2.4)
6. Set up master plan for implementation of Learning Lab (2.1)

September - December 1985

1. Meet with area teachers to discuss purposes of C.A.S.T. and the Learning Lab - this will be a dinner meeting (1.1, 2.1, 2.2, 2.4)
2. Attend the fall meeting of the Special Education Parent Group of Athens to explain C.A.S.T. and Learning Lab (1.1, 2.1, 2.2, 2.4)
3. Establish a joint task force of professionals and parents to consult with the IRC and recommend software purchases for the Learning Lab (2.3)
4. Develop software evaluation forms (3.4)

5. Develop evaluation and data keeping forms for the proposed project (3.3)

6. Conduct initial training (1.1, 1.2, 2.4)

7. Hire part-time secretry, and student managers for Learning Lab (2.1)

8. Subscribe to Special Net and conduct training (1.1, 1.2, 1.3)

9. Administer instrument for measuring learning gains made by children and collect data for fall quarter (3.2)

January - March 1986

10. Continue to conduct training sessions (1.1, 1.3)

11. Continue operation of Learning Lab (2.1)

12. Purchase additional software as recommended by task-force (2.3)

13. Hold Learning Lab open house for community (2.1, 2.3)

14. Continue to collect data regarding use of lab by professionals, parents, and students (2.1, 2.3, 3.5)

March - June 1986

15. Hold dinner for teachers and parents to discuss progress of C.A.S.T. (1.1, 2.1, 3.1)

16. Continue to conduct training sessions (1.1, 1.3)

17. Continue operation of Learning Lab (2.1)

18. Change EDSP 476/460 syllabi as necessary, based on Fall quarter evaluation (1.2, 2.1, 2.2)

19. Purchase final software recommended by joint task force (2.3, 3.4)

20. Collect data on use of lab by various groups (2.1, 2.3, 3.5)

21. Collect data on learning gains made by children in Learning Lab for Winter and Spring Quarters (3.2)

22. Collect data to evaluate software effectiveness for specific problems (3.4)

June - July 1986

23. Continue to operate Learning Lab in the Master Teacher Project (2.1)

24. Collect data regarding efficacy of C.A.S.T. (3.1, 3.3, 3.5, 3.6)

25. Complete project report (3.6)

IX. EVALUATION ACTIVITIES:

To evaluate the C.A.S.T., data will be collected for Goal 3 and will be utilized to evaluate the project. The Director of the project will gather:

1. data regarding use of the Learning Lab (quantitative and qualitative)

2. data to evaluate children's learning gains

3. parent evaluation of training sessions and tutoring

4. data to evaluate computer literacy of students in preservice program (pre and post test)

5. data on software evaluations for specific learning problems

6. teacher evaluations of C.A.S.T.

7. faculty evaluations of C.A.S.T.

THE PENNSYLVANIA STATE UNIVERSITY

G. Phillip Cartwright and James Tawney
223 Moore Building
The Pennsylvania State University
University Park, PA 16802

Phone: 814-863-3117

SpecialNet:

Number of special education students:

Undergraduate: 120   Graduate: 46

Program Description:

Penn State technology courses and programs emphasice instructional design. PSU has a new 5 year doctoral training grant. Undergraduates must take a special ed. technology course. The Intro. to Special Education course (Cartwright & Cartwright) is offered on micros.

SPLED 418

Technology Applications for Handicapped Persons

Spring 1986

G. P. Cartwright
125 Moore Building
865-6072
Hours: Daily by appointment

Readings on reserve in the Curriculum Materials Center, 4th Floor Rackley Building.

Concept Overview

Unit Objective: In order to better serve special students, preservice educators will be able to identify, describe the function and appropriate user population, and incorporate into classroom instruction current technological innovations designed to facilitate learning, mobility, communication, functions of daily living, and vocational aspirations of individuals with disabilities.

Unit Goal: Increase the technological knowledge base of persons who work with disabled persons so that such persons can participate more fully in classes and life.

Unit Goal: Each student will operate a microcomputer, describe the various instructional, administrative, and home uses for a handicapped person, and evaluate software for use with handicapped students within a daily classroom setting.

Specific Evaluation Procedures:

1. Attendance required: January 21, 28; February 4, 11, 18, 25; March 18 (5 points each session)
2. Bibliographic search appointment (5 points)
3. 5 Research Abstracts based upon #2 (15 points)
4. 10-page paper based on #2 (30 points)
5. Eight software reviews (40 points)

SPLED 418

Reasons for Performance Objectives

1. A basic tenet of special education, supported by Public Law 94-142, is an individualized educational program designed for each child, which will enable that person to attain his/her maximum potential. Without utilizing the technological innovations, children with disabilities may have additional handicaps imposed upon them.

2. Public Law 94-142 maintains that handicapped children be educated in the least restrictive environment. An environment without technology, needlessly restricts both the social and educational life of a handicapped student.

3. Individualizing programs for children seems to be a massive administrative problem for teachers, however, by utilizing technology the teachers place some of the burden upon machines which frees them to instruct.

4. To incorporate technology into a classroom, teachers must maintain an enthusiastic acceptance and positive attitude toward it's inclusion within their classrooms and be able to defend its presence to budget-minded administrators.

Sample Performance Objectives

1. Students will be able to categorize technological devices and applications by appropriate handicapping conditions.

2. Students will be able to describe the instructional purpose of specific technological devices and how they can be incorporated into an existing classroom setting.

3. Students will demonstrate the techniques required to utilize a technological device appropriately.

4. Students will be able to justify and defend the purchasing of specific technologies.

5. Students will be able to list technological devices designed to facilitate communication or mobility of disabled persons.

6. Given a short description of a handicapped pupil, the student will design an appropriate educational environment correctly utilizing technological devices beneficial to that individual pupil.

7. Students will select computer software that matches the educational needs of a specified population.

Specific Objectives

1. Each student will list the name and appropriate user population for two technological devices which facilitate expressive oral communication.

2. Each student will state, in writing, the procedural steps required to operate two technological devices which facilitate expressive oral communication.

3. Each student will list and describe, in writing, two devices utilized by the blind to increase independence.

4. Each student will list and describe, in writing, two technological devices which will enable a blind student to participate in mainstream classes.

5. Given a budget limit, each student will design an ideal mainstreamed classroom using appropriate technological devices which will enable a deaf student to participate in mainstreamed classes.

6. Each student will state and justify three distinct applications for using microcomputers with special education classes or special students in mainstreamed settings.

7. Each student will list and describe, in writing, the purpose of devices which will allow a physically handicapped child to participate in a mainstreamed classroom.

8. Each student will state how the invention of two technological devices will enable a handicapped person to be gainfully employed.

9. Each student will generate an IEP which will include a technological device as a required portion of the handicapped pupil's individualized program.

10. Each student will write a paper justifying and defending the school district's purchase of a selected technological device to be used to assist a handicapped student's participation in a mainstream setting.

11. Each student will determine an alternative use for a given technological device.

12. Each student will select and defend, in writing, the purchase of two software microcomputer packages for a given population.

13. Each student will write an essay on the role of technology in the education of handicapped students, based upon a computer based technology search.

14. Each student will evaluate eight software packages, K-12 level.

SPLED 418

Schedule and Assignments

Session #	Date	Assignment**	Topic Activity
1	1/14		Course Description, Requirements Overview of Technology
2*	1/21	A	Specific Technology and Computer Applications for Individuals with Disabilities
3*	1/28	B Paper Topic Due	Devices for Visually Impaired Charles Ness, Pattee Library (Basement)
4*	2/4	C	Augmentative Communication Systems Dan Tullos
5*	2/11	D	Computer Data Bases Linda Friend, Pattee Library
6*	2/18		Computer Data Bases Linda Friend, Pattee Library
7*	2/25	E	Speech Recognition James Mitch
	3/4		No Class - Spring Break
8	3/11		Word Processing Training Session Lech Wisniewski
9*	3/18	F	Computer Assisted Instruction for Children with Disabilities
10	3/25		Software Reviews Meet in 308 Rackley Microcomputer Laboratory
11	4/1	Abstracts Due	
12	4/8		
13	4/15	4 Reviews Due	
14	4/22		
15	4/29	Paper Due	
	5/15	4 Reviews Due	

*Attendance required
**Packets on reserve at Curriculum Materials Center, 4th Floor Rackley

TECHNOLOGY APPLICATIONS FOR HANDICAPPED PERSONS
SPLED 418
Fall, 1987

Semester:
Fall, 1987
Thursdays, 6:30 to 8:30pm
107 Moore Bldg.

Instructor:
Mr. Lech Wisniewski
203 Cedar Bldg.
863-2004

Office Hours: 5:00 to 6:30pm Thursdays; or by appointment

Course Requirements: Participants will be expected to read and complete all assigned chapter and module readings, complete 2 exams, 4 software evaluations, 3 short abstracts, 2 technology searches, a class project, and actively participate in class discussions. The following points and grades will awarded in this course.

4 software evaluations	= 25pts.	(5%)
3 abstracts	= 25pts.	(5%)
2 searches	= 50pts.	(10%)
class project	= 75pts.	(15%)
2 exams	= 300pts.	(60%)
classroom participation	= 25pts.	(5%)
Total	= 500pts.	(100%)

Grading Scale

A	475-500
A-	450-474
B+	438-449
B	416-437
B-	400-415
C+	375-399
C	350-374
D	300-349
F	< 300

Textbook:
Lindsey, J. D. (1987). *Computers and Exceptional Individuals*. Columbus, OH: Charles E. Merrill Publishing Co.
Xerox Packet of Modules
(1) Floppy disk

Overview: The purpose of this course is to examine the various technologies emerging for the handicapped. As we will see, a variety of applications are being made designed to improve the fit between the individual's handicap and his or her environment, thereby reducing the severity of an impairment. This course will focus upon the application of prosthetic aids and devices and computers (i.e., microprocessors) in improving the quality of life for the handicapped. We will examine some mundane technologies- eating utensils, braille, and crutches, and others which probably could be described as being on the "cutting-edge"- artificial intelligence, robotics, and cortical implants.

Individualizing these programs for children and adults is often viewed to be a massive administrative problem for teachers and rehabilitation specialists. By utilizing technologies the professional places some of the burden upon machines, freeing one to improve instruction or rehabilitation. As pre-service educators, you will be expected to master a number of these "high-tech" tools which will allow you to not only become a more marketable prospective teacher but will also allow you to become better prepared to enter the 21st century with a variety of "future's skills".

Without utilizing technological innovations, those with disabilities may have additional handicaps imposed upon them. An environment without technology will needlessly restrict both the social and educational life of your students and adult clients. To incorporate technology into a classroom or rehabilitation setting, teachers must maintain an enthusiastic and "positive attitude" toward using machines. In addition, teachers must be able to take these machines and design, implement, and evaluate a variety of instructional and rehabilitation applications.

General Course Objectives:

In order to better serve special students and adults, pre-service educators will be able to identify, describe the function and appropriate user population, and incorporate into classroom instruction current technological innovations designed to facilitate learning, mobility, communication, daily living, and vocational aspirations of individuals with disabilities.

This course will increase the technological knowledge-base of those persons, from birth to death, who work with disabled persons so that such persons can participate more fully in society. The following course objectives have been identified:

a. identify devices/systems
b. describe the basic operation of the devices/systems
c. list current applications
d. list novel applications
e. specify training needed to operate the systems/devices
f. locate sources to purchase devices
g. recognize and describe a broadened concept of "prosthetic arrangement"
h. differentiate between therapeutic and prosthetic strategies
i. identify common prosthetic arrangements with nonhandicapped populations
j. identify common prosthetic arrangements with handicapped populations
k. identify architectural barriers to functional mobility in the environment
l. differentiate between:
    cosmetic vs. functional prosthetics
    sensory vs. response prosthetics
    environmental vs. personal prosthetics
m. describe and give examples of prosthetics within each of the following categories:
    locomotion
    life-support aids
    personal grooming
    communication
    household aids
n. program "intelligence" and instructional systems
o. utilize systems for instruction, data management, and IEP management
p. identify appropriate computer software
q. evaluate software
r. utilize word processor
s. differentiate handicaps and disabilities
t. identify the components of a computer
u. describe instructional, administrative, and home uses of microcomputers
v. become computer literate
w. identify appropriate software described as tutorial, simulations, drill and practice, and games
x. discuss interactive video technology
y. differentiate CAI and CBE; "soft" and "hard" technologies

Session	Dates	Topic
PART I: TECHNOLOGICAL TRANSFORMATION OF SOCIETY		
#1	8/27	Course Description and Outline
		Mod. #1- Overview of Technology
		A. "On becoming a high-tech teacher" and other matters
		1. Perspectives Influencing a World View on Technology
		2. A Future's vs. Historical Perspective on Technology
		3. Basic Definitions
PART II: TOOLS FOR TEACHERS		
#2	9/3	Mod. #2- P.C. Training
		A. Initial overview of hardware
		Mod. #3- Word Processing- AppleWorks
		A. Word Processors
#3	9/10	Mod. #3- AppleWorks (cont.)
		B. Data Base
		Mod. #2- P.C. Training (cont.)
		B. Ergonomics
		C. Disks, disk drives and peripherals
#4	9/17	Mod. #3- AppleWorks (cont.)
		C. Spreadsheet
#5	9/24	Mod. #4- Telecommunication
		A. Electronic Data Bases
#6	10/1	Mod. #5- Information Technology
		A. Hard Technologies
		B. Soft Technologies
		1. Legislation
		2. National Resources Centers
		3. Technology Organizations
		4. Networks and Databases
PART III: SOFTWARE FOR KIDS		
#7	10/8	Mod. #6- Computer-based Education/ Computer-assisted Instruction
		A. Systematic Instruction (Instructional events human vs. the machine)
		B. Drill and Practice
		C. Tutorial
#8	10/15	Mod. #6- Computer-based Education/ Computer-assisted Instruction (cont.)
		D. Simulation
		E. Games
		F. Tests
#9	10/22	Mod. #7- Software/Hardware Evaluations
		A. Qualitative vs. Quantitative Evaluation
		1. Instructional Design
		2.Instructional Content
		3. Student Use
		4. Teacher Use
		5. Presentation
		6. Technical Aspects
#10	11/5	Mod. #8- Video Disk Technology
		A. Videodisc and Videotape

PART IV: TECHNOLOGICAL APPLICATIONS FOR THE HANDICAPPED

#11 11/12 Mod. #9- Technologies of the Blind and Visually Impaired
- A. Prosthetic Aids and Devices
  - 1. Environmental Orientation and Human Mobility Aids
  - 2. Reading Aids
    - a. Optical aids
    - b. Nonoptical aids
  - 3. Electronic light-technology vision aids
  - 4. Electronic high-technology vision aids
  - 5. Future's Technology
- B. Computer Applications
  - 1. Speech Synthesizers
  - 2. Speech Compression

#12 11/19 Mod. #10- Technologies of the Deaf and Hearing Impaired
- A. Prosthetic Aids and Devices
  - 1. Aids for the Hearing Impaired
  - 2. Hearing Aids
  - 3. Aids for the Deaf
- B. Cochlear Prosthetic Implant
- C. Living aids
- D. Computer Assisted Instruction

Mod. #11- Technologies of the Speech and Language Impaired
- A. Microcomputer Modification of Articulation, Fluency, and Voice Disorders
- B. Artificial Larynx

#13 11/16 Thanksgiving break (no class)

#14 12/3 Mod. #12- Technologies of the Orthopedically and Health Impaired
- A. Mobility Aids
  - 1. Wheelchairs
  - 2. Orthotics
  - 3. Bio-engineering
  - 4. Artificial Limbs
- B. Communication
- C. Environmental Control
- D. Computer Applications
  - 1. Instruction

#16 12/10 Mod. #13- Technologies of the Learning Disabled
- A. Technologies of Instruction
  - 1. Reading
  - 2. Penmanship
  - 3. Writing and Spelling
  - 4. Mathematical Reasoning and Calculations
  - 5. Spoken Language and Effective Listening
- B. Assessment
  - 1. Neurometrics

#17 12/10 Mod. #14- Technologies of the Emotionally and Behaviorally Handicapped
- A. Behavioral aids (bio-feedback)
- B. Social Skill Development

Mod. #15- Technologies of the Mentally Retarded
- A. Artificial Intelligence
- B. Prosthetic Environments

MODULE 5
INFORMATION TECHNOLOGY

Module Overview:

A technology for the handicapped is a process which includes two relevant aspects- "hard" technologies and "soft" technologies. The Office of Technology Assessment defines "hard" technologies as the ***what***; while "soft" technologies refers to the ***how*** and by **whom**. "Hard" technologies are the concrete discoveries and inventions that produce the data bases of information, facts, and knowledge which increase our basic understanding of the handicapped, their needs, and the potential solutions to their problems. This is the role of science: to develop this data base. Technology's role is to apply this information: to define, design, develop, and disseminate (the 4-D's) which can aid the handicapped and reduce the severity of their impairments. A variety of technologies old and new, simple and complex, inexpensive and costly, exotic and commonplace presently exist, and all are designed to aid the handicapped in some way. It is the "soft" technologies that decide, however, which potential solutions become viable alternatives. It is the emerging technologies of computer-based instruction, their many peripherals, and other "high" as well as "light" tech devices that are the focus of this course.

"Soft" technologies are the social, political, human, and organizational infrastructures which support the 4-D's of technology. Within such a infrastructure, a social environment is created which provides a variety of developmental and support services, hot lines, clearinghouses, data banks, professional associations and their journals, public and private libraries, public inquires, referral services, teleconferencing, and the like. Occasionally, when this social context is well organized and begins to exert social and political influences to bring about changes, legislation is passed which supports these processes and activities. The passage of P.L. 94-142, as recently amended, has been regarded as the most important "soft" technology for the handicapped.

The flood of information that science has produced has aided our basic understanding of the handicapped and has generated a considerable number of technologies that can be applied to improve their functioning and enhance their lives. A number of groups play a significant role in this system, and are the focus of this module; these include consumers, professional associations, service delivery systems, and research and development centers.

Module Outline:

I. Hard Technologies
II. Soft Technologies
  A. Legislation
  B. National Resources Centers
    1. Center for Special Education Technology
    2. Special Education Software Center
    3. National Information Center for Handicapped Children and Youth
    4. Higher Education and the Handicapped
    5. National Rehabilitation Information Center
    6. Educational Resources Information Center
  C. Technology Organizations
    1. Technology and Media
  D. Networks and Databases
    1. ABLEDATA

Module Activities:

In this module, your searches and brief reading assignment will present a classification scheme that represents the formal organization of ABLEDATA. ABLEDATA is a computerized database containing thousands of products for the handicapped. We may have the opportunity to demonstrate, in class, the holdings of ABLEDATA, and how information is retrieved, sometime during the term. NORDIC, the formal organization scheme, is the classification system that stores, arranges, and presents information on a variety of aids and devices. In addition, NORDIC will orient you in your module activities to consider a number of non-computer technologies that we will have alluded to during the term. Your assignment in this module will be to begin organizing your own scores of information on available technologies for a given discipline. Each of you will be assigned a professional and popular journal. Your tasks will be several: (1) to list all vendors and their product(s)- vendor's name, address, phone, product name and a short description (2-3 sentences) for each product listed; (2) to xerox all annual indexes; and finally (3) after reading the abstracts and skimming the articles, discuss "the technological trends" observed in your cursory review, in a 2-3 page, single-spaced paper.

Module Objectives:

8.1 Differentiate hard and soft technologies.

8.2 Discuss the merits and limitations of NORDIC as a classification system for aids and devices. Consider this question in terms of each category of the handicapped which we will consider in this course.
8.3 Critique a technology classification system based upon function vs. one based upon handicapping condition.
8.4 What is the purpose of NORDIC.
8.5 What categories of the handicapped does the NORDIC system favor.
8.6 Identify potential governmental (federal and state) resources that would help you to identify potential devices or aids for the handicapped. Do the same for social service agencies, professional associations, and resource centers.
8.7 Define "cross-classification."
8.8 List the 4-D's of technology development.
8.9 Discuss the infrastructures supporting the 4-D's.
8.10 Identify relevant agency responsibilities and briefly describe the important functions and purposes of the following national resource centers.
  a. TECH tape #101- Center for Special Education Technology
  b. TECH tape #102- Special Education Software Center
  c. TECH tape #103- National Information Center for Handicapped Children and Youth (NICHCY)
  d. TECH tape #104- Higher Education and the Handicapped (HEATH)
  e. TECH tape #105- National Rehabilitation Information Center (NARIC)
  f. TECH tape #106- Educational Resources Information Center (ERIC)
  g. TECH tape #121- Technology and Media (TAM)
  h. TECH tape #135- ABLEDATA

Reading Materials:

Petren, F. (1982). NORDIC information system of technical aids for disabled persons. In J. F. Garrett (Ed.). Monograph Number Seventeen- Information systems of technical aids for the disabled: A transnational view. New York: International Exchange of Information in Rehabilitation, World Rehabilitation Fund, Inc.

WEST CHESTER UNIVERSITY

Deborah Nickles
Special Education
West Chester University
West Chester, PA 19383

Phone: 215-436-1060

Number of special education students:

Undergraduate: 150   Graduate: 60

Program Description:

West Chester offers two stand-alone courses on computers in education and courses with segments on technology. This fall, they will have a course on special education technology.

West Chester University
West Chester, Pennsylvania

Deborah Nickles, Chairperson
Department of Special Education

EDA 349 PROGRAMMED ENVIRONMENTS

OBJECTIVES:

This course is intended to prepare the prospective teacher with an overall view of curriculum preparation in the field of special education. This view will include the study of methods, materials, equipment and curricular areas uniquely designed to meet the needs of handicapped learners.

OUTLINE:

I. Writing Useful Objectives

II. Selecting and Implementing Learning Activities
  A. Lesson plans
  B. Unit plans
  C. Learning centers

III. Daily Living Skills
  A. Basic motor actions
  B. Eating skills
  C. Dressing skills
  D. Toilet training
  E. Grooming skills
  F. Independence aids

IV. Technology in the Classroom
  A. Motoric aids
  B. Low vision aids
  C. Hearing aids
  D. Adaptive devices
  E. Computers

    1. adaptations for the disabled
    2. educational adaptators

V. Career Education
  A. Academic skills
  B. Occupational skills
  C. Personal - social skills
  D. Daily living skills
  E. Orientation
  F. Placement
  G. Agencies and organizations

REQUIREMENTS AND EVALUATIONS:

Requirements for the course will include announced quizzes and final examinations. Projects will be required which will include work with units learning centers using information and ideas from other segments of the course.

TEXT: To be selected by the professor.

COLLEGE OF CHARLESTON

Frances C. Welch
College of Charleston
Charleston, SC 29424

Phone: 803-792-5613

Number of special education students:

Undergraduate: 50   Graduate: 50

Program Description:

At the College of Charleston, the indroductory course in technology is required of all students. Graduates may take The Application of Computers in Special and Remedial Education. This year, the College will add a cognate in Educational Computing to their program.

COLLEGE OF CHARLESTON

EDUCATION 796: APPLICATION OF MICROCOMPUTERS IN SPECIAL AND REMEDIAL EDUCATION.

LOCATION: ALICE BIRNEY MIDDLE SCHOOL
TIME: MONDAY: 4:00 TO 6:45

INSTRUCTOR: GAYLE L. GRAYSON, SELF-CONTAINED LD TEACHER
MORNINGSIDE MIDDLE SCHOOL

PHONE: WK: 745-7122 (LEAVE MESSAGE)
HM: 556-2084 (BETWEEN 4 - 6 PM)

DR. FRANCES WELCH, EDUCATION DEPT., COC
792-5613

DESCRIPTION: Provide an introduction to Apple computers for teachers of students with special needs. The course will stress computer terminology, knowledge of the machine, and the ability to operate a number of "off the shelf" software programs. Students will evaluate software and adaptive devices pertinent to students with special needs.

TEXT: MICROCOMPUTER APPLICATIONS IN THE CLASSROOM :
ALAN HOFMEISTER

OBJECTIVES:

1. Students will demonstrate ability to perform fundamental computer operations on an Apple microcomputer with 100% accuracy.

2. Students will define fundamental computer related terminology with 80% accuracy.

3. Students will state the function of Apple computer components, peripherials, and selected adaptive devices with 100% accuracy (joystick, Kaola Pad, voice synthesizer, cassette control device, etc.), as related to students with special needs.

4. Students will demonstrate ability to perform all functions of the MECC teacher utility programs, Study Guide and Puzzles and Posters , as related to students with special needs with 90% accuracy.

5. Students will demonstrate ability to perform all functions of the word processing program, Bank Street Writer, with 90% accuracy as related to the needs of special students and teacher support.

6. Students will demonstrate ability to perform all functions of at least one Math and one Reading Courseware series with 90% accuracy.

7. Students will demonstrate ability to modify the content of selected software (Hartley and MECC) to conform to the curriculum of their respective teaching situations or a hypothetical situation with 90% accuracy.

8. Students will demonstate ability to evaluate ten (10) educational software programs relative to special or remedial education requirements with 90% accuracy.

9. Students will establish a resource file of data pertinent to special or remedial education.

10. Students will demonstrate ability to enter and execute programs of less than 100 lines written in LOGO and BASIC with 100% accuracy.

REQUIREMENTS

1. A cumulative mid-term and final exam covering content from objectives, lectures, demonstrations, and text. (30% of final grade)

2. Completion of 18 periodical article summaries concerning computer use in education. 10 or more should be related to computers and people with special needs, 8 could be related to computers and general education.

(a) Articles are to be selected by the student and MUST HAVE BEEN PUBLISHED AFTER 1-1-83.

(b) 3 summaries are due each week. ALL summaries are to be completed by 10-28-85 (mid-semester).

(c) The bibliography data, summary, and personal comments are to be recorded on 4X6 index cards. Your name and date should be written in the upper right hand corner. A maximum of 2 articles from the same source each week. Try to read from a broad range of publications during the semester. (10% of final grade)

3. Evaluations of 10 different educational software programs related or modifiable to students with special needs, not formally presented in class. Forms to be provided by instructor. Evaluations are due 11-10-85 (20% of final grade)

4. SPECIAL PROJECT: DUE 11-24-85 (20% of final grade)
The following are recommended topics. Any other topics must be approved by instructor.

(a) Students may report on a literature search of a topic pertinent to students with special needs. The report must be based on a minimum of 5 sources. It must not exceed 5 typewritten pages, single spaced. The topic must be approved by the instructor.

(b) Participants may develop a file of software evaluations and reviews relevant to their teaching situation or a hypthetical situation. A minimum of 20 programs are required, these are in addition to the 10 evaluations necessary to meet course requirements.

(c) Using a test generating program of your choice, you may prepare a minimum of 3 different tests, not versions of the same test, with at lease 20 questions and remedial hints. The tests may be from the same subject, but different topics. You must turn in the disks as well as hard copies of the test.

(d) You may use an authoring system to create 2 separate lessons of at least 20 frames each, pertinent to children with special needs. (Hartley, CLAS, PILOT, ETC). Turn in disks as well as hardcopies.

(e) Students may prepare 3 IEP s, using a computerized IEP package or a word processing program. The IEP's must include present levels and at least 5 objectives for each academic area and for developmental. Disks and hard copy.

(f) Students may research and report on available adaptive hardware and/or software for a particular handicapping condition. Be sure to include reviews, evaluations, literature from company, stated purpose, price, and compatible hardware and/or software.

(g) Participants may develop a unit or units to introduce or utilize computers in their respective classrooms. Besure to include:

- inventory of hardware and software available in your school
- recommendation of hardware and software purchases relevant to your students' needs, include prices
- statement of objectives
- materials and methods
- scheduling
- arrangement of classroom
- ETC

REQUIREMENTS:

30 %	EXAMS
20 %	SOFTWARE EVALUATIONS (11/10)
10 %	ARTICLE SUMMARIES (10/28)
20 %	PROJECT (11/24)
20 %	CLASSROOM PERFORMANCE

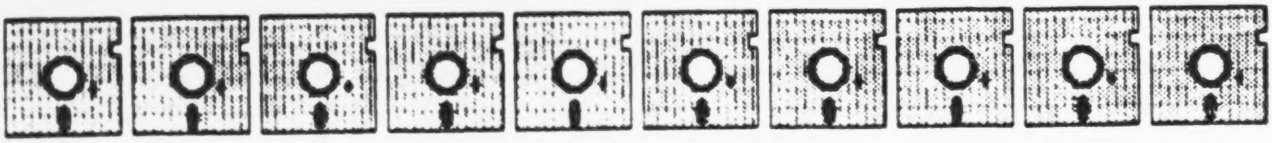
GRADING SCALE:

A = 97 - 100
A = 93 - 96
B+ = 89 - 92
B = 85 - 88
C+ = 80 - 84

F = 79 OR BELOW

SMILE ! IT CAN ONLY GET WORSE !

(REV 8-20-85)



COMPUTER CLASS
JANUARY 1986
COLLEGE OF CHARLESTON

EDUCATION 796: APPLICATION OF MICROCOMPUTERS IN SPECIAL AND REMEDIAL EDUCATION

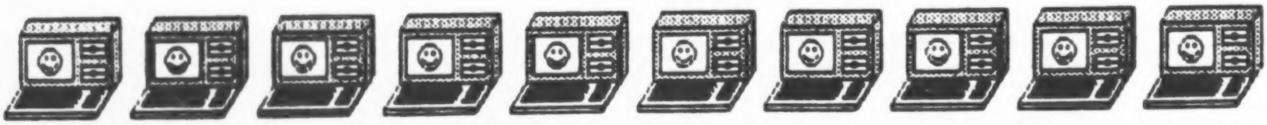
LOCATION: COLLEGE OF CHARLESTON
MICRO-COMPUTER LAB

TIME: MONDAY: 4:00 TO 6:45

INSTRUCTOR: GAYLE L. GRAYSON,
SELF-CONTAINED LD TEACHER
MORNINGSIDE MIDDLE SCHOOL

PHONE: WK: 745-7122 (LEAVE MESSAGE)
HM: 556-2084 (BETWEEN 4-6 PM)

DESCRIPTION: PROVIDE AN INTRODUCTION TO APPLE COMPUTERS FOR TEACHERS OF STUDENTS WITH SPECIAL NEEDS. THE COURSE WILL STRESS COMPUTER TERMINOLOGY, KNOWLEDGE OF THE MACHINE, AND THE ABILITY TO OPERATE A NUMBER OF "OFF THE SHELF" SOFTWARE PROGRAMS. STUDENTS WILL EVALUATE SOFTWARE AND ADAPTIVE DEVICES PERTINENT TO STUDENTS WITH SPECIAL NEEDS.



Education 326: The Application of Computers in Education

Spring Semester, 1986 T/TH - 10:50-12:05

Professor: Frances C. Welch, Ph. D.
Office: 302 College Way
Telephone: 792-5613 or 792-8049
Office Hours: T/TH; 9 - 10:30 AM & 3 - 4 PM
Other times by appointment

Description: Introductory course for preservice teachers who plan to use computers in the classroom. The course includes both awareness and functional levels of educational computing. Participants are made aware of computer terminology, types and components of computers and the potential use of computers in education. In addition, they learn to evaluate hardware and software.

Location: Liberty Street 335 (Microcomputer Lab)

Goals:

1. Have a working knowledge of computer terminology.
2. Understand types and components of computers.
3. Understand potential use of computers in education (CAI, management, BASIC, LOGO, student programming, word processing, authoring languages, etc.).
4. Write goals for computer use in education.
5. Have a basic knowledge of microcomputer hardware and educational software and have procedures to evaluate these.
6. Understand sociological impact and implications to the curriculum of computers.
7. Input, edit, and print a document using a word processor.
8. Write simple programs in Logo and Basic.
9. Use simple teacher utility programs.

Text: Computers in the Classrom (Radin, Lee, and Marrapodi), 1985, Chicago: SRA.

Requirements:

1. Two tests and a final examination covering content from objectives, lectures, demonstrations, and text. (3/4 of final grade)

2. Completion of 5 summary/critiques (one page typed, summary and critique) of articles about computer use in a particular subject area (2) and in general (3). Readings are selected by the participant from available articles with suggestions by the instructor (1/4 final grade).

3. Evaluation of one piece of software (Pass/Fail).

4. Completion of assigned lab work (Pass/Fail).

5. Demonstration of ability to use word processor and teacher utility programs.

Grading Scale:
A = 94 - 100
B+= 89 - 93
B = 83 - 88
C+= 76 - 82
C = 70 - 75
D = 65 - 69
F = less than 65

Schedule:

January 14	Introduction to course and requirements
January 16 & 21	Types and use of equipment, terminology, Chapter 1 - 2 and Appendix D, Lab Assignment: Completion of Computer Connection
January 23 & 28	Evaluation and use of software, Chapter 3, Lab Assignment: Review and Evaluation of Software
January 30	Software Evaluation Due, Review for Test
February 4	Test 1, Introductory materials and Chapters 1-3
Feb. 6, 11, 13	Logo, Chapters 5 - 7 and Appendix F, Lab Assignment: Practice Logo
Feb. 18	Establishing a lab, resources, Chapters 10 and 11, Appendices F & G,

Feb. 20	Deciding and writing goals, steps in the implementation of microcomputers in the classroom and school, managing students and the learning environment with microcomputers, Appendix K Read and report 3 general articles
Feb. 25 & 27	Teacher utility programs, Chapters 8 & 9 Lab assignment: Practice utility programs
March 4	Review
March 6	Test 2 - Cumulative
March 18 & 20	Word processing, Lab Assignment: Input, edit, and print a document
March 25	Sociological implications, Chapter 4
March 27	Using microcomputers with the handicapped
April 1, 3, & 8	Programming in Basic, Lab Assignment: Practice Basic
April 10	Speaker on microcomputer use in schools
April 15	Summary/Critiques on Subject Area Due
April 17	Future of Computers in Schools
April 22 & 24	Review
TBA	Cumulative Final Exam

SYLLABUS FOR

INTRODUCTION TO COMPUTERS FOR EDUCATORS

EDUCATION 687 --- COLLEGE OF CHARLESTON

I. INTRODUCTION:

Introduction to Computers for Educators is designed to enable teachers and other instructional personnel to understand the nature of computers, their impact on society, and their proper use in instructional settings. This is accomplished through discussion and "hands-on" interaction with a computer. Topics in the course include evaluation, selection and utilization of courseware, computer components and terminology, computer capabilities and limitations, computer use and careers, and introductory programming in the Logo language.

II. OVERALL GOALS & OBJECTIVES OF THE COURSE:

Upon completion of the course, Introduction to Computers for Educators, the student will be able to:

1. discuss the historical development of computers;
2. discuss the widespread applications and implications of computers to today's society;
3. identify the limitations of computer for certain applications and the potential abuse and inconvenience of computers;
4. name the components of a computer and discuss the function of each component;
5. demonstrate his/her ability to operate a computer;
6. evaluate and utilize appropriate software for instructional purposes;
7. describe and use computer tool software including a word processor, a data base, a spreadsheet, and telecommunications; and
8. create and successfully execute programs using the Logo computer language.

III. INSTRUCTIONAL MATERIALS:

A. Radin, Stephen; Fayvian Lee, and Maryann Marrapodi. Computers in the Classroom: A Survival Guide for Teachers: Logo Edition. SRA Publishing Company. 1985.

B. Apple II Student's Guide: An Orientation Course for the Apple //c and Apple //e. Apple Computer, Inc. 1985.

IV. COURSE REQUIREMENTS:

The student will:

1. evaluate two (2) pieces of educational software;
2. critique nine (8) journal articles; and
3. submit a curriculum project.

V. EXAMINATIONS:

A. The software evaluations and critiques of journal articles together will count as one examination.
B. The curriculum project will count as one examination.
C. The mid-term and final examination will each count as an examination.

VI. SEMESTER GRADE COMPUTATION:

A. Each examination will be weighted in the following manner:

	%	POINTS
1. Critiques (8) and software evaluation (2)....25 points each	25	250
2. Curriculum Project	25	250
3. Mid-Term Examination	25	250
4. Final Examination	25	250
TOTAL	100	1000

B. Determining the final grade:

	TOTAL POINTS	GRADE	GRADE POINTS
SUPERIOR	900-1000	A	4.0
VERY GOOD	900-899	B+	3.5
GOOD	700-799	B	3.0
FAIR	600-699	C	2.5
FAILURE	599-0	F	0.0

VII. ATTENDANCE:

Any student who misses four or more classes will be give the grade of "F" unless an agreement is made with the instructor for suitable "make-up" work.

VIII. COURSE OUTLINE:

FIRST CLASS MEETING --- January 13.
- Introductions
- Identification of Parts of the Computer

SECOND CLASS MEETING --- January 20.
- Historical Development of Computers
- Societal Impact of Computers
- Critique #1 Due
- Read Chapters 1 & 3 in Apple II Student's Guide
- Read Chapter 1 & 2 in Computers in the Classroom.

THIRD CLASS MEETING --- January 27.
- Introduction to AppleWorks
- Word Processing --- Part 1
- Critique #2 Due
- Read Chapters 3 & 4 in Computers in the Classroom.

FOURTH CLASS MEETING --- February 3.
- Word Processing --- Part 2
- Critique #3 Due

FIFTH CLASS MEETING --- February 10.
- Data Base --- Part 1
- Critique #4 Due

SIXTH CLASS MEETING --- February 17.
- Data Base --- Part 2
- Critique #5 Due

SEVENTH CLASS MEETING --- February 24.
- Spreadsheet
- Telecommunications
- Critique #6 Due

EIGHTH CLASS MEETING --- March 3.
- Mid-Term Examination

NINTH CLASS MEETING --- March 10.
- Types of Computer Assisted Instruction
- Critique #7 Due

TENTH CLASS MEETING --- March 17.
- Evaluating Software
- Matching the Computer with Your Curriculum
- Critique #8 Due

ELEVENTH CLASS MEETING --- March 24.
- Computer Managed Instruction
- Read Chapter 8 in Computers in the Classroom.

TWELFTH CLASS MEETING --- March 31.
- Utility Software
- Critique of two (2) software packages
- Read Chapter 9 in Computers in the Classroom.

THIRTEENTH CLASS MEETING --- April 7.
- Introduction to Logo Programming --- Part 1
- Read Chapter 5 & 6 in Computers in the Classroom.

FOURTEENTH CLASS MEETING --- April 21.
- Introduction to Logo Programming --- Part 2
- Curriculum Project Due
- Read Chapter 7 in Computers in the Classroom.

FIFTEENTH CLASS MEETING --- April 28.
- Final Examination

CURRICULUM PROJECT

GENERAL GUIDELINES: Project should cover a period of at least five class sessions. It should be appropriate for the grade level you are teaching or plan to teach. It should be written with enough clarity and specificity that another teacher could take the project description and implement it with his/her students. Additional, the project should be practical and reasonable for the teacher to implement and of benefit to the students.

The project should include a description of each of the following components:

I. Purpose of the project:

II. Grade level(s):

III. Type of student: (gifted and talented, visually impaired, slow learner, all, etc)

IV. Goals and Objectives (what the teacher intends for the students to accomplish as a result of completing the project or unit):

V. Brief description:

VI. Implementation strategies:

- Type of Software Used
- Time Needed (specify what is needed with the computer as well as for work not on the computer).
- Size of group - (individual, small group, whole class, etc)
- Specification of the following as appropriate:
  ---materials
  ---resources
  ---equipment
  ---procedures
  ---other

VII. Student Evaluation:

VIII. Comments, etc:

PEABODY COLLEGE OF VANDERBILT UNIVERSITY

Ted S. Hasselbring
Peabody College of Vanderbilt University
Box 328 PCVU
Nashville, TN 37023

Phone: 615-322-8186

SpecialNet: PCVUSPECIALED.

Number of special education students:

Undergraduate: 60   Graduate: 100

Program Description:

At the undergraduate level, instruction on appropriate uses of technology is merged with principles of effective instruction. Graduate level training emphasizes research on the use of technology as well as using technology for conducting research.

Effective Microcomputer Training and Implementation [1]

Ted S. Hasselbring
Peabody College of Vanderbilt University

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[1] A version of this paper was presented at the Third Annual Conference of the Special Education Software Center, May 3-5, 1987, Arlington, Virginia.

Running Head: TRAINING AND IMPLEMENTATION

Effective Microcomputer Training and Implementation

Microcomputers have been an integral part of many special education classes for the past five to seven years and researchers are reporting that the number of computers being used in special education classes is on the rise (Becker, 1986; Cosden & Semmel, 1987). Over the years, this influx of computers into special education classrooms has been accompanied by enormous claims and promises of improved learning for handicapped students. Unfortunately, many of these claims and promises have not yet been realized. Although some studies have attributed learning advantages to the use of the computer, others have not. Thus, the equivocal nature of the research concerning the effectiveness of computers in special education has left many teachers, parents, and administrators confused, and in some cases, even angry. It is my belief, however, that the unfulfilled promises of enhanced learning have very little to do with computer technology per se. Rather, these findings are more directly related to issues of teacher training and effective implementation.

The purpose of this paper is to examine the issues surrounding effective microcomputer training and implementation in special education. I will begin with a discussion of the relationship between effective instruction and microcomputer technology. This will be followed by examining a possible model for future training and implementation efforts.

The Effect of Media on Learning

Most everyone agrees, at least at a verbal level, that the computer is simply an educational tool. However, if one examines the literature closely, it appears that many educators attribute much more innate teaching potential to the computer than they do to other instructional media such as books, overhead projectors, and chalkboards. In his review of research on the effects of media on learning, Clark (1983) argued convincingly that computers, and other media, serve only as delivery mechanisms for instruction and do not influence learning directly. Clark stated, "The best current evidence is that media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (p. 445). Clark goes on to point out that "bad instruction" whether or not it is delivered by a computer, will not result in student learning. On the other hand, good instruction will result in learning regardless of the medium in which it is presented.

What one must conclude from Clark's review is that if the computer is to be an effective instructional tool, then training and implementation must consist of two specific components. First, teachers must be trained in the principles of effective instruction. Second, teachers must be given the technical skills that are necessary to use the computer for enhancing effective teaching principles. It is my belief that if effective computer use is to become a reality in special education, then teachers must understand how the principles of good instruction and computer technology can be used in a synergistic fashion to attain the learning advantages that have been promised for so long.

Effective Instruction

Since 1970, a significant literature has emerged on the characteristics of effective schools and classrooms. A synthesis of much of this literature was reported in a special issue of Exceptional Children, entitled, "In Search of Excellence: Instruction That Works in Special Education Classrooms" (Algozzine & Maheady, 1986). From this and other reviews of effective instruction (Hawley et al., 1984) it is apparent that a number of the salient characteristics of effective schools and classrooms can be enhanced through the use of computer technology.

What has emerged from the effective teaching literature is an empirical description of the effective teacher. Effective teachers do the following: (a) optimize academic learning time, (b) reward achievement in appropriate ways, (c) use "interactive" teaching practices, (d) hold and communicate high expectations for student performance, (e) select the appropriate unit of instruction, and (f) continuously monitor student progress. Although the computer cannot and should not be expected to mold every teacher into the composite educator described above, the computer can be used to assist the teacher in implementing many of the principles of effective instruction. An example of how teachers can be trained to enhance the principles of effective instruction will be provided later in this paper.

Technical Skill Training

If we expect teachers to enhance teaching through the use of microcomputer technology then teachers must be well trained in the technical aspects of the microcomputer. Although most special education teacher trainers have reported that training in the use of microcomputers was either very important or essential for special education teachers (Blackhurst & MacArthur, 1986), until recently, little has appeared in the literature that has provided teacher trainers with guidelines for training.

Blackhurst (1987) recently addressed this problem by developing a list of microcomputing competencies for special education teachers that provides trainers with a comprehensive checklist of generic microcomputing skills. A task analytic approach was used to generate the list of 79 competencies that are clustered into 10 functional groupings. The functional groupings are: Acquire a body of knowledge about the use of microcomputer technology in special education; Evaluate microcomputer software for its potential application in special education programs; Develop a plan for microcomputer use in a special education program; Use microcomputers to facilitate instruction in special education programs; Use the microcomputer to generate teaching aids for the special education classroom; Use a microcomputer as an aid to personal productivity; Disseminate information about applications of microcomputer in special education; Assemble, operate, and maintain the components of a microcomputer system in a special education environment; and Use microcomputer operating system commands. Blackhurst's competency list could be used at the preservice or inservice level as a guide for the development of training programs.

In using this competency list I believe that the trainer must be careful not to allow the list serve as an end in itself. Rather, the competencies should be trained within the larger context of effective instruction. Research growing out of cognitive psychology suggests that in-context learning is much more powerful and more likely to produce transfer and generalization than out-of-context learning for both children and adults. Thus, it would appear that the use of an "infusion model" in which teachers are trained to use technology within the context of effective instruction training provides a viable approach to technology training.

An Infusion Model

Currently, at Peabody College we are using an infusion model for our undergraduate training in technology. It is our philosophy that we must first train our students in the skills of good teaching, and when appropriate, use the computer to enhance good teaching. In using an infusion model, we train our students to use the computer within their special education content courses. We do not have an independent course on the use of the computer in the special education classroom.

What follows are two examples of how the infusion model is implemented in one undergraduate class for training students to enhance two of the basic principles of effective instruction, the increase of academic learning time, and the continuous monitoring of student progress.

Increasing Academic Learning Time. Regardless of the instructional task, research on effective instruction has shown that the major intervening variable between teacher instructional behavior and student achievement is academic learning time -- the amount of time students spend engaged in academic tasks that they perform with high success rates (Fisher, Berliner, Filby, Mariiave, Cahen, Dishaw, & Moore, 1978). Academic learning time incorporates three distinct empirical measures. First, allocated time, refers to the amount of classroom time available for students to work on academic tasks. Allocated time is controlled by the teacher. Second, engaged time, is the proportion of the allocated time that the student is paying attention to the task. Third, task appropriateness, is a measure of student task success or failure and can be partitioned into three subsets, high success, medium success, and low success. High success describes situations in which the student makes only occasional errors; low success describes situations in which correct responses are made at the chance level only: and medium success describes all other situations (Bright, 1983).

Ideally, one wants to maximize the amount of time that a student spends engaged in high success activities. This can be accomplished if the engaged time with a constant ratio of high success can be increased, or if the ratio of high success within a fixed amount of engaged time can be increased. Improvement in the amount of academic learning time offers important opportunities for improving educational quality and effectiveness. In addition to its relationship to achievement, ALT is significant because it is an alterable variable in the educational process.

Once our students understand the concept of academic learning time we demonstrate how it is a relatively simple matter for them to use the computer to increase it. Researchers have reported consistently that the amount of time that students are willing to spend on the computer, the total allocated time, is longer than with other instructional materials. Further, student engaged time while on the computer is reported consistently to be 85 to 90 percent with more typical instruction ranging from 15 to 70 percent (Cosden & Semmel, 1987). Thus, two of the three necessary conditions for increasing ALT appear to be naturally occurring phenomena when the computer is being used. If teachers can select software that is related to the instructional objective and allows the student to be highly successful then all of the conditions for increasing academic learning time are present.

We train our pre-service teachers to maximize ALT through a two step process. First, the teacher must make sure that a child receives a specified amount of time on the computer each day, and second, the teacher must make sure that the instructional task is highly successful for the student. We demonstrate that this two step process results in significant achievement gains by presenting findings from our own research on using the computer for developing automaticity in basic math facts . In this research the computer manages the problem sets that the student receives so high success rates are guaranteed. Thus from these studies we can show that if the teacher gets the student on the computer each day - resulting in increased academic learning time - then student achievement can be significantly increased (Hasselbring, Goin, and Bransford, 1987).

Enhancing Continuous Monitoring. Effective teachers constantly monitor and evaluate student performance. Essentially, in order to be responsive to the pupil's needs the teacher must be a student of the pupil's behavior, carefully analyzing how that behavior changes from day to day and adjusting the instructional plan as necessary to facilitate continued learning (White, 1986).

At Peabody we place heavy emphasis on the monitoring of student behavior. All pre-service teachers become competent in continuous monitoring procedures such as probing and measuring students' behavior, charting student progress, and making data-based decisions. First, these skills are taught using traditional paper and pencil procedures. After the teachers can demonstrate that they are competent in each of these skills, they are introduced to the use of technology to make the tasks of data collection, charting, and decision-making less time-consuming and more efficient, especially with large groups of children. Thus, the effective use of technology is taught within the broader context of student monitoring for effective instruction. Once teachers have been trained in the concept and practice of continuous monitoring, we have found that they are more likely to use the technology for this purpose. If teachers are not well trained in continuous monitoring procedures then we have found the use of the technology is often meaningless and many times is used inappropriately.

The examples above are only two of many from our undergraduate curriculum. Training in IEP development, as well as the teaching of math, language arts, and reading are all taught in conjunction with the effective use of the computer. In all cases, however, training in the use of the computer is infused with training in the content areas.

Summary

The effective use of computer technology can be realized. However it will require that teachers first understand and implement effective teaching strategies, and second, use technology where appropriate to enhance these practices. I have provided only two examples, but there are many more. Training teachers to implement computer technology in an effective manner does not require that one totally abandon curricula and training strategies that are currently in place. It does, however, require a willingness on the part of universities and LEA's to modify and adapt training strategies to take advantage of the synergy created by combining effective teaching strategies with appropriate uses of technology.

References

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LAMAR UNIVERSITY

Sandra Haven
Lamar University
513 Donna Court
Port Neches, TX 77651

Phone: 409-722-6321

Program Description:

Most of the training that Lamar students receive is through their methods classes. Lamar offers one course in their graduate school, Microcomputers for Teachers, that is taken by general education as well as special education teachers.

Microcomputers for Teachers P.D.G.S. 5340
Dr. Sandra Haven
Lamar University
Lamar TX

COURSE SYLLABUS-EDUCATION 5340

I. Title: PDGS 5340 Microcomputers for Educators

II. Texts: "Apple II Basic"
by June Grant Shane
Houghton Mifflin Co., Boston:1983

"Classroom Computers:An Additional Tool of the Trade"
by Dr. Sandra Haven
Kinko Copies. 1050 Colorado. Beaumont.TX.

III. General Objectives:
The course is designed to give teachers an awareness level of computer literacy and allow them to use the computer as an additional tool in the classroom.

General Considerations:

Learning about computers
Learning using computers
Learning incorporting computers

IV. Instructional Objectives

A. To become aware of the present importance and uses of the computer in practically all phases of contemporary life especially in education, and its possible implications for the future.

B. To become acquainted with the history, development, and simple anatomy of the computer.

C. To help teachers feel comfortable using the computer.

D. To develop a basic knowledge of the computer and its operation in performing specific functions. (i.e.copying disks, copying programs,save,run,etc.)

E. To preview and evaluate educational software and professional or classroom management programs.

F. To perform simple programming using the BASIC language.

G. To develop a knowledge of word processing.

H. To become acquainted with some of the limitations of the computer.

I. To preview and evaluate computer hardware.

V. Requirement:

The student is to obtain at least two 5 1/4 inch floppy diskettes.

VI. Activities

A. Hardware evaluation (-10 point value)

B. Software evaluation (-10 point value)

C. Project-of students choice (50 point value)

D. Computer Literacy assignment (15 point value)

E. BASIC Program (10 point value)

F. Test #1 (BASIC Language)(50 point value)

G. Test #2 (Computer Literacy)(50 point value)

H. Miscellaneous Assignments (-10 point value each)

I. BONUS (5 point value each)
   1. Use word processor to type Computer Literacy assignment.
   2. Do graphics using BASIC or music

VII. Grading Scale:

160-175	A
140-159	B
122-139	C
105-121	D
Below 105	F

FDGS 5340 Microcomputer for Educators   Semester __________

ASSIGNMENT SHEET

ASSIGNMENT	DUE DATE	SCORE
1. School **Computer** Report (-10 point value) See pg. 24 and pg. 64		
2. Hardware evaluation (-10 point value) See Hardware Unit		
3. Miscellaneous assignments (Clippings,school report,etc.) (-10 point value)		
4. BASIC Program (+10 point value) See pg. J		
5. BASIC Language Test (+50 point value) See pgs. 65-84		
6. Software Evaluation and lesson plan (-10 points) See Software Unit		
7. Computer Literacy Report (-15 point value) See pg. D		
8. Individual Project (+50 point value) See pgs. F-G-H-I		
9. Computer Literacy Test (+50 point value) All units except Basic Unit		

Grading Scale:		
	160-175	A
	140-159	B
	122-139	C
	105-121	D
	below 105	F

EDG5 5340 Microcomputer for Educators

COMPUTER LITERACY ASSIGNMENT

Computer Literacy is an important part of an education for all persons. The State is requiring it now for all students. The teachers who will be teaching these students should also have a good Computer Literacy background. This assignment is to strengthen your background!

Choose one of the following to complete and turn in. Be sure this assignment is typed. Remember, five point BONUS can be obtained on this assignment by using word processing.

Include such things as educational value of the article, conference, etc.; how information could be used by you in your own classroom; any positive or negative reactions you had; how this information is relative to today's society; etc.

1. Attend an all day (or more) conference on micro-computers and their used in the classroom. Write a paper on the information obtained from this conference.

2. Xerox five articles that have to do with computer literacy or to some aspect of using microcomputers in the classroom. (to be turned in)
Write a one page reaction paper to each of the articles. This assignment will be approximately five typed pages when completed. Report orally on one of the articles you read.

3. Write a five page research paper on some aspect of microcomputers. (this could also be expanded for your individual project)

4. Prepare an article for publication on some aspect of micro-computers. Use guide of chosen magazine.

5. View the New Literacy telecourse. (Programs are listed on the next page). You are to view at least three of these segments. Write a one page summary of the program viewed. (Be sure to reference the program in detail) Also, write a one page critique of the segment. Limit your reaction to one page. This assignment will be approximately six pages long when completed. (These T.V. programs may NOT be available each semester.)

EDUCATION TELECOURSE

TELECOURSE TITLE: The New Literacy

TELECOURSE DESCRIPTION: The New Literacy is an up-to-date survey of electronic data processing, computer hardware and software systems, and developments that will provide the basis for further advances in information processing. The course is designed to provide a comprehensive overview of the computer: what it is, what it can and cannot do, how it operates, how it may be instructesd to solve problems, familiarize learners with the terminology of computer science and examine the application of the computer to a broad range of organizational settings and social environments and to prepare learners to understand and utilize computers in both their personal and professional lives. The broadcast material, in addition to activities in our computer lab, will provide those wishing to become familiar with the world of computers with a thorough introductory learning experience.

TELECOURSE BROADCAST SCHEDULE: Segment Titles and Topics.
Twenty-six 30-minute segments will be aired two per week on Saturdays.

INTRODUCTORY COMPUTER CONCEPTS
1.A Literate Society
2.The Computing Machine,Part I
3.The Computing Machine,Part II
4.Communicating with a Computer
COMPUTER SYSTEM DATA FLOW
5.Data Representation
6.Putting Data In
7.Getting Information Out
8.Storing Data
9.Secondary Storage
COMPUTER SYSTEMS AND APPLICATIONS
10.Processors
11.Computer Operations
12.Personal Computing
13.From Micros to Monsters
SYSTEM DESIGN AND PROGRAMMING
14.System Analysis and Design
15.Problem Solving and Program Design
16.Programming Languages
17.The Programming Environment
ENHANCED SYSTEM CAPABILITIES
18.Operating Systems
19.System Options
20.Computer Files and Data Bases
21.Data Communications
22.Office Automation
23.Computing Services
COMPUTING AND SOCIETY
24.Computing, Organiztions, and the Individual.
25.Computer Society
26.Issues and Trends in Computing

SUGGESTIONS FOR CLASS PROJECTS Edu. 5340

(Micro-computers for Teachers)

Purpose: The purpose of this project is to stregthen your background in the scope of microcomputers. Choose a topic that is of interest to you and one that you actually want to complete.

You may work with a partner on this project, if you find someone who has the same interests you do and one you could work with to complete such a project.

1. Learn a new language such as LOGO or PASCAL.

2. Write a term paper on some aspect of micro-computers. Many ideas of possible topics are listed in the book RUN:Computer Education by Harper & Stewart.

   Some areas of interest might include:

   Ways of using the microcomputer in the elementary classroom.

   Working with the special student and microcomputers

   Science, English, Math, P.E. etc. etc. -- and the microcomputer

   Micro computers and the school administrator, librarian, counselor, supervisor, diagnotician, school testing program....

   Individualizing instruction with computer aid.

   The administrator and educational management system

   Early childhood and computer use

   Computers and music

   Micros and Health

3. Prepare a grant proposal to submit for computer givaways.

   All major companies seem to be initiating these grant programs. Information kits are available by written request to:

   Tandy TRS-80 Educational Grants Program
   Radio Shack Education Division
   400 Tandy Atrium
   Fort Worth, Texas 76102

   Apple Education Foundation also provide microcomputers & software for research projects-testing microcomputer uses--See Pgs. 38-39 of The Computing Teacher Dec. 82 issue for ideas.

The Data Processing Management Association Education Foundation has established a grants and awards program to provide funding for the projects that further education in the areas of information processing, computer science, and computer applications in business.

4. Solid field RESARCH results are needed --- on how to effectively use the micro-computer in the classroom; also, we know relatively little about how to individualize instruction using the computer; how will the microcomputer change the conventional curriculum?
There are many, many possibilities here. Also, this could lead into a thesis for some interested person working on a master's degree!!!

5. Prepare and submit a RESERACH PROPOSAL(similar to the one prepared for Education 531) on a study you would someday like to do, on some aspect of computers.

6. Complete a "REVIEW OF THE LITERATURE" on some aspect of computers

7. Prepare an ARTICLE FOR PUBLICATION: Magazines like the Computing Teacher would like to carry articles describing situations where substantial change in the current curriculum content is occurring.

   Be practical - what can a teacher use right now?
   what should be happening in our schools?

8. Develop an INSTRUCTIONAL UNIT PLAN for use in your class on teaching your students about computers -- i.e. goals, objectives, activities, evaluation procedures, time limits, projects, ect.....

9. DESIGN A PROGRAM for integrating the uses of microcomputer in your classroom in aiding in the instruction of your subject area(CAI-design).

10. Develop a district-wide computer-use plan.

11. Obtain a collection of books and materials to be place in a CENTER OF INTEREST on computers — for student use.

12. Set up a contest for the students in your school to choose the best software developed by the students.

13. Prepare - a "History of Computers" - handout; unit; daily lesson plan, etc.

14. Determine some administrative uses - athletic statistics
    class attendance
    performance records

15. Locate supplementary materials on computers - filmstrips, video tapes, booklets, demonstration disks, overhead transparencies, etc.

16. Develop rules and procedures for computer use - all media materials need to be used as often as possible and for as long as possible!

17. Design a "computer fair" for your school. Let parents "in on" what their children are doing in school with computers.

18. Order the College Board 1983 SAT Exam Preparation Series and work up a program for submitting its use in your school district.

19. Desgin a program - for using computers to teach graphing functions to students; mathematics to elementary students; science in a laboratory setting

20. Research the uses of PLATO; the powers of VISI CALC; the DRAFTSMAN or any other special program.

21. Set up a self-study training course on computers in your classroom.

22. Prepare a list of programming projects for your students.

23. Collect software games. Determine how their use could be effective in your clas

24. Prepare a computer inservice class plan for your school district.

25. Educational Software: What's available for --Social studies, math, science, etc.

26. Complete a SURVEY of the uses of the computer in:
your school district, Jefferson County(Hardin County), State of Texas

27. Prepare a handout on the role of the Regional Service Centers in assisting school districts with the use of micro-computers.

28. Develop a computer educational game.

29. Design a program to assist students in developing a game for the computer.

30. Prepare a list of competitions open to students to enter so they can receive regards or scholarships.

31. Collect micro-computer courseware for use in your classroom. Be sure to document what you have available for use.

32. Coordinate a computer program for your school district ---

    allow for a time of sharing of what you are doing(and what others are doing)

    organize a system for cataloging software available in the district

    arrange time for copy sessions

33. Prepare a computer summer school unit for your district.

NAME: ______________________________

PROJECT EVALUATION FORM

Rating Scale: 1. not at all 2. somewhat 3. on the whole
4. very much 5. extremely

1. Was the project interesting? _______
   4=Above average 5=unusual

2. Was the project informative? _______
   4=Above average 5=new or unusual information

3. Had the topic been thoroughly researched? _______
   4=6 or more sources 5=variety of sources

4. Was the given information useful to educators in the given area of microcomputers? _______
   4=very useful 5=majority would use

5. Were (current) sources cited? _______
   4=bibliography 5=Latest included

6. Did the presenter seem to be an authority on the subject? _______
   4=no mistakes 5=use of media

7. Was the project of high quality work? _______
   4=above average 5=unsurpassed

8. Was the project neat and well prepared? _______
   4=cover,title,etc. 5=extra included

9. Did there seem to be an effort made on the part of the preparer in development of the project? _______
   4=did requirements well 5=did extra

10. Was the topic presented thoroughly? _______
    4=above average 5=no way to improve

SUGGESTED GRADE: (add total points given _______
(50 points possible)

COMMENTS AND SUGGESTIONS

____

____

____

____

BASIC PROGRAM EVALUATION

__________________________ (Name of Person Evaluated)

__________________ (Name of program)

Rating Scale: 1.Unacceptable 2.Requires Improvement 3.Adequate 4.Professionally Competent 5.Excellent

1. Creativity __________
   4=above average 5=unusual

2. Originality __________
   4=above average 5=unusual

3. Use of BASIC commands __________
   3=10-15, 4=16-20, 5=21+

4. Computer efficiency __________
   4=1 mistake 5=no mistakes

5. Reinforcement vs. Criticism __________
   4=variety,positive response 5= gives correct answer

6. Time Element
   (Problem difficulty)
   (Dull vs. Challenging) __________
   4= variety or ability to change 5=both of 4

7. Documentation __________
   4=cover,purpose, flowchart, listing 5= extra

8. Organization of the Program __________
   4=order,title & ending page 5=good directions and responses

9. Comparison of problems vs. solution __________
   4= easiest way 5= ability to reuse program

10. Applicational value for the Classroom __________
   4=easiest solution 5=ability to change to reuse

TOTAL GRADE: ______/5

SUGGESTED GRADE: __________

(10 points poss

REVIEWER________________________________

Edu. 5340

ASSIGNMENT

1. Buy a "big town" newspaper this next Sunday. Look for and cut out ads on computer sales.

2. Look in the classified ads. Cut out job opportunities that require the use of computers.

3. Begin finding and bringing to class articles that pertain to computers and computer use.

4. Visit a "computer store". Listen to the "sales'pitch"--sit down at the computer and try to work it.

5. If you are teaching, find out how many of your students own home computers.

GEORGE MASON UNIVERSITY

Michael Behrmann
George Mason University
4400 University Dr.
Fairfax, VA 22031

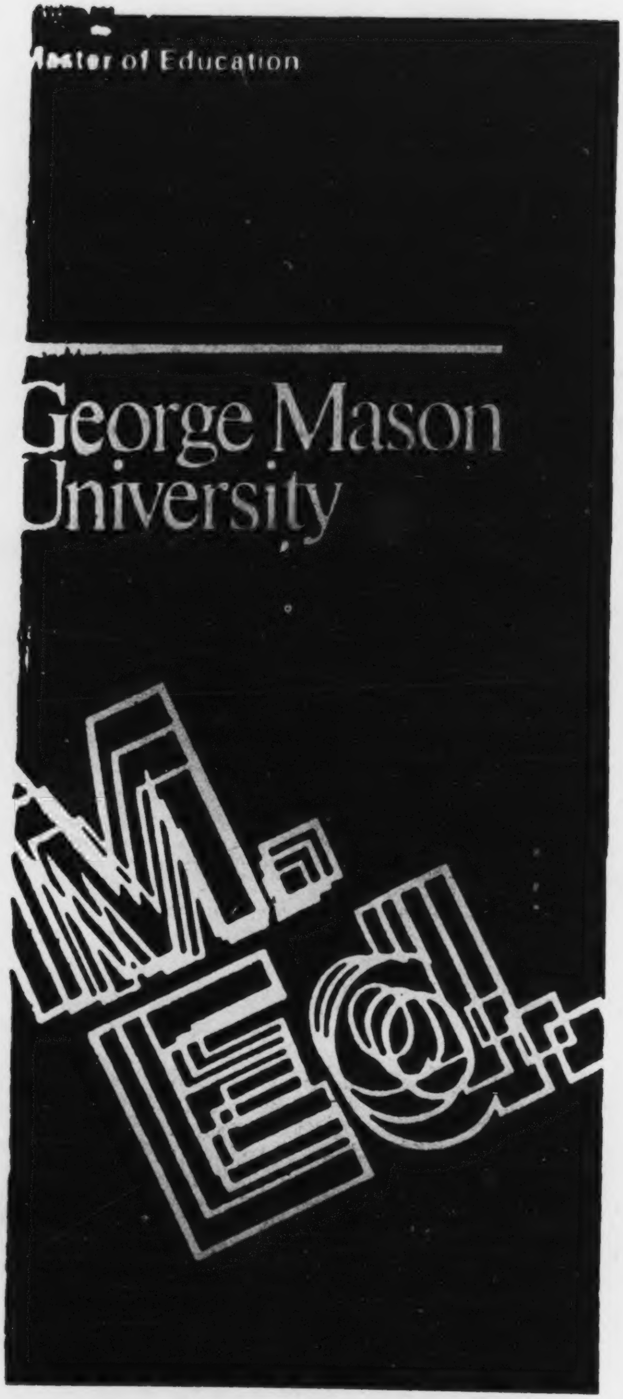
Phone: 703-323-4396

Number of special education students:

Undergraduate: Graduate: 150

Program Description:

George Mason University offers a masters degree in special education technology.



Master of Education

George Mason
University

M.Ed.

The University

George Mason University, the State University in Northern Virginia, located on 571 wooded acres in historic Fairfax, offers undergraduate, graduate (including doctoral) and professional degrees in almost 90 fields. With a full and part-time faculty of more than 850 members, the University serves nearly 16,000 students through the College of Arts and Sciences, the College of Professional Studies, the School of Business Administration, the Graduate School, the School of Law and the Division of Continuing Education. Although the majority of students commute to George Mason from Virginia, Maryland and Washington, D.C., the University offers on-campus housing, as well as a full range of student activities and services.

Master of Education Programs

The Department of Education offers the master of education degree (M Ed) in the following fields administration and supervision, elementary education, counseling, reading, secondary education, and special education All of the graduate programs have been approved by the State Department of Education and are accredited by the Southern Association of Colleges and Schools and by the National Council for Accreditation of Teacher Education

Areas of Specialization

The following areas of specialization are available

Bilingual/Multicultural Education p 18
Community Agency Counseling p 11
Counseling and Development p 7
Education Administration and Supervision p 5
Education of the Early Childhood Handicapped p 13
Education of the Emotionally Disturbed p 13
Education of the Learning Disabled p 13
Education of the Severely and Profoundly Handicapped p 13
Elementary Education p 6
Elementary School Counseling p 10
Higher Education Counseling p 10
Instructional Use of Microcomputers p 18
Middle School Counseling p 10
Pre-Elementary Education p 6
Reading p 11
Secondary School Counseling p 10
Secondary Education p 12
Special Education p 13
Writing p 19
Vocational Education p 19

Graduate School Admissions Policies and Procedures

The Graduate School uses the admission categories of degree and provisional for those applicants with degree objectives A graduate student registered in another graduate school may be given permission to register on a temporary basis as a guest matriculant. For applicants with no immediate degree objectives, the nondegree category of admission is available.

The general admission requirements to the Graduate School for degree status are

1 An earned baccalaureate degree from an accredited institution of higher education;
2 A 2 75 grade-point average or better in the last two years of undergraduate study;
3 Some undergraduate preparation for the chosen field of graduate study;
4 Submission of official transcripts and all other documents required by the Graduate School.

In addition to fulfilling the Graduate School entrance requirements, the applicant must do the following

1. Meet specific requirements for the program desired The entrance requirements for each program are shown immediately following the program description.
2 Candidates must meet the following departmental requirements:
   a. Education 590 - Research in Education (3 hours)
   b Education 521 - Foundations of Education (2 hours)
   c. Specialized foundational studies related to appropriate program (2 hours)
3 Complete the number of semester hours and course requirements for the graduate program in which enrolled.
4 Pass a comprehensive examination (where required) covering the graduate program in which enrolled.

Departmental Entrance and Degree Requirements

Applications and all supporting documents must be received by the Graduate School Admissions Office no later than May 1 for the Fall semester, Nov. 1 for the Spring semester, and March 1 for the Summer session. All correspondence or requests for information should be directed to Admissions Office, George Mason University, 4400 University Drive, Fairfax, Virginia 22030 Phone (703) 323-2100

Students holding baccalaureate degrees who wish to take courses toward teacher certification only should apply for nondegree status in the Graduate School. Students holding masters degrees who seek to complete licensure, endorsement, or certification requirements should also apply for nondegree status. For additional information, contact the certification specialist in the College of Professional Studies.

Transfer of Credit Policy

No credit earned more than seven years prior to admission to a program will be transferred. Credits earned within the seven-year period are evaluated by the student's adviser. No more than six semester hours from another institution can be transferred.

Graduate Assistantships

Administrative, research, and teaching-related graduate assistantships are available in the Department of Education. Persons awarded assistantships may be assigned to one or more of the various programs, services, or faculty members in the department. To be eligible for an assistantship, students must be admitted to degree status and take a minimum of six semester hours of graduate credit each semester in which they serve as graduate assistants. Interested students should contact the Education Department office for applications.

M.Ed. Programs

Education Administration and Supervision

The master of education program in administration and supervision is designed to enable qualified individuals to improve their abilities to participate in the leadership and management required in schools and other institutions. Through individualization of programs, candidates prepare themselves for a wide variety of positions such as assistant principal, principal, instructional director, instructional coordinator, head teacher, and others.

Entrance Requirements

All applicants must

1. Have an undergraduate grade point average of at least 3.00;
2. Provide three letters of recommendation.

An application to the M.Ed. program in administration and supervision who is planning on a school-based career must:

1. Provide evidence of certification at the collegiate professional level by the State of Virginia or another jurisdiction;
2. Have completed two years of successful teaching experience, a portion of which must be at the level where qualification is desired; and
3. Be recommended by three professional educators, including at least one in the position of principal, supervisor, or administrator who has observed the applicants teaching.

(People from other fields must have comparable qualifications based on criteria appropriate to their respective fields.)

Degree Requirements

The M.Ed. in administration and supervision requires 30-36 semester hours. In addition to the departmental course requirements, students must take one course in each of the following areas:

1. Curriculum (3)
2. Education Administration (3)
3. Supervision and Instruction (3)
4. EDAS 789 Seminar in Education Leadership (3)
5. EDAS 790 Practicum in Education Leadership (3-6)

Other courses are selected in conjunction with an adviser and permit candidates to work toward specific school endorsements or other specializations. (Virginia endorsement usually requires a minimum of 36 semester hours.)

An advanced certificate program for post-masters students in Education Administration and Supervision is under consideration. Contact the program faculty for information.

Elementary Education

The master of education program in elementary education is designed to improve the competence of teachers working with children at the pre-elementary, lower elementary, and upper elementary levels. Specializations are available in pre-elementary (below), elementary (below), bilingual/multicultural education (p. 18), and instructional application of microcomputers (p. 18).

Entrance Requirements

A student preparing for the *pre-elementary* specialization (infancy/kindergarten) must meet the following requirements:

1. Possess a baccalaureate degree.
2. Submit evidence of three years of acceptable teaching or administrative experience in a preschool or elementary school program. (This requirement is waived for a student who can provide evidence of certification at the collegiate professional level in elementary education by the Commonwealth of Virginia or another jurisdiction.)
3. Submit recommendations by three persons qualified to judge the candidate's professional competence.

A student preparing for the elementary specialization must:

1. Provide evidence of certification at the collegiate professional level in elementary education by the Commonwealth of Virginia or another acceptable jurisdiction, and
2. Submit recommendations by three persons qualified to judge the candidate's professional competence.

Degree Requirements

In addition to the departmental degree requirements, students must take 6 hours of basic concentration courses, 9-15 hours in an area of specialization, and additional course work to meet the degree total of 30 semester hours. Normally, students are required to take as the basic concentration EDCI 650 and 782, in that order. (EDCI 782 is usually offered only in the Spring term.) In addition, students normally take nine hours in one of the following specializations:

1. Pre-elementary Education (Infancy/Kindergarten): EDCI 511, 512, 513, 514, or EDSE 541 or other pre-elementary courses.
2. Elementary Education: EDCI 657, 658, 660, 661, 663, 666, EDGC 624, EDRD 559, EDSE 541, or EDUC 565.

Counseling and Development

The M.Ed. program in counseling is designed to prepare students to function as counselors in a variety of work settings, including elementary, middle, and secondary schools, colleges, and community agencies, and as other student personnel professionals in higher education. The program is designed to develop competence in a broad range of areas including group and individual counseling, career counseling, and assessment. The program emphasizes the integration of theory and practice and seeks to prepare knowledgeable and capable helping professionals for a wide range of employment settings. The culmination of the students' program is the internship in which students are placed in a school or agency counseling setting similar to that in which they hope to be employed. This offers students the opportunity to test and refine their counseling skills while experiencing the role of the counselor.

Entrance Requirements

1. Students preparing for elementary, middle, or secondary school counseling and seeking the M Ed degree must:
   a. Provide evidence of certification at the collegiate professional level by the Commonwealth of Virginia or another acceptable jurisdiction;
   b. Have successfully completed a minimum of 12 semester hours of undergraduate work in the behavioral sciences;
   c. Have completed two years of successful work experience, one year of which must be in a school setting;
   d. Submit three letters of recommendation from supervisors or professors regarding the potential of the applicant for the field of counseling;
   e. Submit a statement of interests and objectives;
   f. Be interviewed and recommended for acceptance.
2. Students interested in the specializations in higher education or agency counseling and seeking the M Ed degree must comply with most of the requirements listed above. They do not, however, need to provide evidence of certification (1a), nor do they need to have completed two years of successful work experience (1c).
3. Program courses have been approved by the Commonwealth of Virginia as satisfying the specific requirements for licensure as a professional counselor. Individualized programs can be developed for post-masters degree students seeking licensure. Students who wish to take courses in the counseling program but who do not want a degree should apply to the program as nondegree students. Those who seek endorsement, licensure, or other professional development should consult with a program adviser prior to application.

Degree Requirements

The M Ed in Counseling and Development requires 39 semester hours. Students admitted to the degree program will take the following courses.

	Semester Hours
EDGC 604 Analysis of the Individual	3
EDGC 606 Counseling Theory and Practice	4
EDGC 608 Group Processes and Analyses	3
EDGC 610 Career and Educational Counseling	4
EDGC 754 Practicum in Counseling and Development	3
EDGC 790 Internship in Counseling and Development	6
Specialization courses (see below)	9
Departmental Foundations Courses	7
	39

School Counseling

The school counseling specialization prepares students for careers as elementary, middle, or secondary school counselors. Graduates of this program of study will possess the academic and experiential prerequisites for endorsement as school counselors by the Virginia Department of Education.

Required specialization courses:
EDGC 620 Philosophy and Principles of School Counseling (1)
EDGC 666 Counseling and Development for Special Populations (3)
EDGC 668 Counseling and Development Programming (3)

One of the following:
EDGC 624 Theories and Practices of Elementary School Counseling (2)
EDGC 626 Theories and Practices of Middle School Counseling (2)
EDGC 628 Theories and Practices of Secondary School Counseling (2)

Higher Education Counseling

The higher education specialization is designed to prepare counselors and other student development professionals who share with teaching faculty the responsibility for humanizing and personalizing each student's higher education. Graduates of the program are employed in a variety of positions in post secondary education in counseling centers, career planning and placement, residence halls, student activities, financial aid, academic advising, and special programs for foreign students, returning students, minority students, and others. The higher education counseling specialization focuses on the role of student development professionals, knowledge of special groups, and higher education settings in which student development professionals use their skills.

Required specialization courses:
EDGC 644 College Student Personnel Work (3)
EDGC 666 Counseling and Development for Special Populations (3)
EDGC 668 Counseling and Development Programming (3)

Community Agency Counseling

The specialization in community agency counseling is designed to prepare counselors for employment in a wide range of settings, including community mental health centers, family counseling centers, agencies specializing in career counseling, business and industries, rehabilitation agencies, and government counseling programs. Specialization courses familiarize students with the role and function of agency counselors and provide special skills they will need such as intake interviewing, diagnosis and treatment planning, and couples and family counseling.

Required specialization courses:
EDGC 654 Counseling in Community, Agency, and Business Settings (3)
EDGC 656 Diagnosis and Treatment Planning for Mental Health Professionals (3)
EDGC 658 Couples and Family Counseling (3)

Reading

The master of education program in reading is designed to permit qualified individuals to become reading specialists at the elementary or secondary level or to work with adult readers.

Entrance Requirements

An applicant must:

1. Provide evidence or certification at the collegiate professional level by the Commonwealth of Virginia or another jurisdiction;
2. Have completed two years of successful teaching experience; and
3. Be recommended by three professional educators in the position of principal, supervisor, or administrator, including at least one who has observed the applicant's teaching

Degree Requirements

In addition to the departmental course requirements, students must complete a common core of 15 semester hours, 3-6 hours of specialization, and 6-11 hours of electives in this 36-semester-hour program.

The common core courses are EDRD 611 Remedial Reading, EDRD 613 Diagnostic and Evaluative Techniques in Reading, EDSE 652 Language Development and Disorders, and EDRD 790 Practicum in Reading.

Specializations and specific course requirements for each are Elementary Reading Teacher (EDRD 559 and EDCI 657), Secondary Reading Teacher (EDRD 614 and EDCI 569), Elementary Reading Specialist (EDRD 614 and 618), Reading Specialist with ESL/multilingual students (EDRD 615), and Reading Specialist with Adults/College Students (EDRD 616).

Electives should be selected in conjunction with an adviser from a list of specialization courses or other relevant course work.

Secondary Education

The master of education program in secondary education is designed to improve the competence of teachers who have completed a basic program in preparation for teaching. Teaching fields available for study are biology, business, chemistry, economics, English, French, German, government, history, mathematics, psychology, physical education, physics, science, social studies, Spanish, and vocational education. Specializations are available in vocational education (p. 19), bilingual/multicultural education (p. 18), and instructional application of microcomputers (p. 18).

Entrance Requirements

An applicant must:

1. Provide evidence of certification at the collegiate professional level in secondary education by the Commonwealth of Virginia or another jurisdiction; and
2. Submit recommendations by three persons qualified to judge professional competence.

Degree Requirements

In addition to the departmental degree requirements, students must complete 9-15 semester hours of courses in the teaching field or in a related discipline; EDCI 652, 783; and one of the following as related to the teaching field: EDCI 567, 569, 572, 573, EDRD 614, 615, or EDUC 565. Approved electives bring the total to 30 semester hours. (EDCI 783 is normally offered only in the Fall term.)

Special Education

The master of education degree in special education is designed to enable qualified individuals to develop expertise in educating

special populations Applicants select one of the following areas of concentration
1 Learning Disabilities (LD)
2 Emotional Disturbance (ED)
3 Early Childhood Handicapped (ECH)
4 Severely and Profoundly Handicapped (SPH)
5 Bilingual/Multicultural Special Education (BMSE)

Entrance Requirements

Applicants for the M Ed degree in special education must meet the following requirements
1 Have a baccalaureate degree
2 Submit recommendations by three persons qualified to judge the applicant's professional competence
3 Submit a written autobiography
4 Be interviewed and recommended for acceptance
5 For learning disabilities and emotional disturbance, an applicant must complete or have completed one course in each of the following
a Teaching of Reading
b Teaching of Mathematics
c. Human Growth and Development
d Tests and Measurements
e Survey of Special Education
6 For early childhood handicapped and severely and profoundly handicapped, an applicant must
a. Provide evidence of successful completion of a baccalaureate degree in a human services area such as education, psychology, sociology, or allied health services;
b. Provide evidence of work-related experiences with severely handicapped individuals, and
c. Complete or have completed one course in tests and measurements and in survey of special education.

7 BMSE is taken in conjunction with any of the other fours areas of specialization Requirements include those of the chosen specialization (LD, ED, ECH, or SPH) and one additional course (EDUC 532 - Bilingualism and Language Acquisition Research).

Program Completion Requirements

1. Prior to state endorsement in preschool handicapped, graduates of the early childhood handicapped program must possess collegiate professional certification and have completed two years of experience as an elementary or special education teacher.
2. Prior to state endorsement in severely and profoundly handicapped, learning disabilities, or emotional disturbance, candidates must have or qualify for collegiate professional certification or its equivalent.

Other Specializations

Bilingual/Multicultural Education

Students in either the elementary or secondary M Ed. programs may specialize in bilingual/multicultural education. Twelve hours are required in the specialization as follows.

EDCI 517 Introduction to Bilingual Education (3)
EDCI 518 Introduction to Multicultural Education (3)
EDCI 519 Methods of Teaching in Bilingual/English as a Second Language Settings (3)
One course in Linguistics (3), or
EDRD 615 Teaching Reading in Multicultural/Multilingual Settings (3)

Students must have full proficiency in English *and* either Spanish, Korean, or Vietnamese. Interested applicants should consult an adviser.

Instructional Applications of Microcomputers

Students in either the elementary or secondary master of education programs may specialize in the instructional use of microcomputers. The fifteen hours required in this specialization are as follows:

EDCI 530 Programming Microcomputers in BASIC for Instructional Applications
EDCI 532 Programming Microcomputers in LOGO for Instructional Applications
EDCI 630 Supervising and Organizing Instructional Uses of Microcomputers and
EDCI 730 Designing Learning Activities for Microcomputers,
plus a three-hour graduate methodology course related to the student's teaching field.

Northern Virginia Writing Project

This project, a cooperative effort between the Departments of English and Education, has developed several courses which students may use upon approval as part of a six-hour writing concentration within the elementary or secondary M Ed program. These courses are

EDUC 695 NVWP In-Service Program
EDUC 696 NVWP Research Seminar
EDUC 697 NVWP Theory of Composition

Teachers who have completed the Project's summer institute may also use this course as part of their degree requirements.

Vocational Education
Students in the M Ed in secondary education may specialize in vocational education. This specialization is designed to meet the needs of people with backgrounds in such areas as industrial arts education, occupational education, business and office education, general vocational education, special needs education, cooperative education, adult education, and home economics education.

In addition to meeting other departmental program requirements, nine semester hours are required to meet the state certification requirements for administration and supervision of vocational education. A minimum of six hours of vocational methods courses is required. Each candidate also selects (with an academic adviser's guidance) a minimum of nine hours of work in the area of specialization. This may include up to six semester hours internship in business or industry. Those interested should consult the Vocational Office in the Education Department.

Department of Education
George Mason University
4400 University Drive
Fairfax, Virginia 22030
(703) 323-2421

Financial Aid Office
353 Student Union Building
George Mason University
4400 University Drive
Fairfax, Virginia 22030
(703) 323-2176

Coordinator
Doctor of Arts in Education Program
Department of Education
George Mason University
4400 University Drive
Fairfax, Virginia 22030
(703) 323-2960 or 2421

George Mason University is an equal opportunity/ affirmative action institution.

George Mason University is fully accredited by the Southern Association of Colleges and Schools.

Degree Requirements
The following table presents course requirements for all M Ed specializations in special education

Courses	Area of Specialization			
	Early Childhood Handicapped	Emotionally Disturbed	Learning Disabilities	Severely and Profoundly Handicapped
EDSE 544: Vocational and Continuing Education Aspects of the Academically Handicapped (1)		■	■	
EDSE 550: Precision Teaching Individual Instructional Procedures (2-3)	■	■	■	■
EDSE 552: Language Development and Disorders (3)	■	■	■	■
EDSE 553: Teaching Remedial Mathematics (2-3)		■	■	
EDSE 554: Adaptive Methods in Education (2)		■	■	
EDSE 620: Advanced Applied Behavior Analysis and Social Learning Theory (3)		■		■
EDSE 622: Augmentative Communication (2)	■			■
EDSE 643: Emotional and Behavioral Disorders of Children (3)		■		
EDSE 645: Characteristics of Children with Learning Disabilities (3)			■	
EDSE 647: Medical and Health Aspects of Handicapping Conditions (3)	■			■
EDSE 648: Introduction to Psychoeducational Assessment (2-3)	■	■	■	■
EDSE 649: Clinical Psychoeducational Assessment in Special Education (3)	■	■	■	■
EDSE 654: Curriculum and Methods - ED (3)		■		
EDSE 657: Curriculum and Methods - LD (3)			■	
EDSE 659: Curriculum and Methods - ECH (3)	■			
EDSE 661: Curriculum and Methods - SPH (3)				■
EDSE 665: Family Intervention Programs for Handicapped Children (3)	■			
EDSE 668: Vocational and Leisure Education for Severely Handicapped (2)				■
EDSE 669: Transdisciplinary Approaches to Rehabilitation (2)	■			■
EDCI 514: Administering and Supervising Pre-Elementary Education (3)	■			
EDGC 606: Counseling Theory and Practice (3)		■	■	
EDSE 782: Comprehensive Topics in Special Education: Trends and Issues (2)	■	■	■	■
EDSE 790: Internship in Special Education (6)	■	■	■	■
EDUC 509 or **EDUC 510**: Human Development (2)	■			■
EDUC 529: Pluralism in U S Education (2)		■	■	■
EDUC 590: Education Research (3)	■	■	■	■
EDUC 521: Foundations of Education (2)	■	■	■	■
Total Credits Required	**41-43**	**42-45**	**39-42**	**42-44**

Faculty

Michael M. Behrmann Ed D., Columbia University	computers in special education/emotional disturbance
Barry K. Beyer Ph D., The University of Rochester	social studies skill teaching curriculum design
Henry J. Bindel, Jr. Ed D., University of Maryland	science education/curriculum
John E. Bonfadini Ed D., Virginia Polytechnic Institute and State University	vocational education
Larry S. Bowen Ph D., The Ohio State University	curriculum theory and practice/K 12
Marjory F. Brown-Azarowicz, Ph D., University of Washington	reading/gifted and talented
Jack C. Carroll Ed D., American University	educational psychology/philosophy of education
Harold B. Chu Ph D., University of Minnesota	bilingual/multicultural education
Virginia P. Collier Ph D., University of Southern California	bilingual/multicultural education ESL
Edward C. Dobson, Jr. Ph D., Florida State University	administration and supervision/curriculum
Lloyd E. Duck Ph D., University of Virginia	social studies/secondary education/social foundations
Mary Ann Dzama Ed D., University of Virginia	reading/elementary curriculum
Albert W. Edgemon Ph D., Columbia University	administration and supervision/staff development
Gloria C. Fauth Ph D., University of Michigan	human growth and development/administration
William J. Haynie III Ph D., The Pennsylvania State University	industrial education/curriculum and instruction
Robert L. Gilstrap Ed D., George Peabody College	social studies/language arts/elementary curriculum
Barbara K. Given Ph D., Catholic University of America	special education learning disabilities and assessment
Joan P. Isenberg Ed D., Rutgers University	early childhood education/reading
Evelyn J. Jacob Ph D., University of Pennsylvania	ethnographic and educational research
Judith E. Jacobs Ph D., New York University	[illegible] computers in education
Edward Jones Ed D., Virginia Polytechnic Institute and State University	reading/adult education
Julie Jones Ph D., University of Pittsburgh	special education
Jack Levy Ph D., University of Southern California	curriculum and instruction bilingual education policy development
William Martin Ph D., University of Minnesota	human relations/English education
Mary S. Montebello Ph D., The Ohio State University	children's literature language arts
Theodore P. Remley, Jr. Ph D., University of Florida	counselor education/law
B. J. Schuchman Ed D., Indiana University	guidance and counseling higher education
Carol Sears Ph D., American University	special education/early childhood/severely handicapped
Linda H. Seligman Ph D., Columbia University	counselor education/agency counseling
Donald F. Smith Ed D., American University	foundations secondary education
Mark A. Spikell Ph D., University of Nebraska	mathematics education/computers in education
Charles L. Thomas Ph D., Johns Hopkins University	assessment and evaluation
Wayne P. Thomas Ph D., Virginia Polytechnic Institute and State University	research and evaluation/computers in education
Ada Valero-Figueira Ph D., University of Michigan	bilingual/special education
William Wilken Ph D., Syracuse University	educational policy/administration and supervision

COURSE REQUIREMENTS FOR MASTER'S DEGREE
SPECIAL EDUCATION TECHNOLOGY

CORE REQUIREMENTS

CATEGORY A: Education Foundations - 7 Hours Total Required

EDUC 590: Educational Research (3)
EDUC 521: Foundations of Education (2)
EDUC 529: Cultural Pluralism (2)

CATEGORY B: Technology Courses - 20 Hours Total Required

EDCI 530: Programming Microcomputers in Basic (3)
EDCI 630: Super. and Organ. Inst. Uses of Micro. (3)
EDUC 517: Overview of Computers and Sped. (4)
EDSE 622: Augumentative Communication (2)
EDCI 705: Instructional Design (3)
EDCI 730: Design. Learn. Act. for Micro. (3)
EDSE 790: Practicum (2)

27 Hours Total Core Requirements

ADDITIONAL REQUIREMENTS

CATEGORY C: Special Education Courses - 7 Hours Total Required

EDSE 550: Precision Teaching (2,3)
EDSE 553: Teaching Remedial Mathematics (2,3)
EDSE 554: Adaptive Methods in Education (2)
EDSE 648: Introduction to Psychological Testing (2,3)
EDSE 654: Curriculum and Methods-ED (3)
EDSE 657: Curriculum and Methods-LD (3)
EDSE 659: Curriculum and Methods-ECE (3)
EDSE 661: Curriculum and Methods-SPE (3)

CATEGORY D: Instruction Technology Electives - 3 Hours Total Required

EDUC 699: Computer Application in Education (3)
EDCI 532: Programming Micro. in LOGO for Instr. Appl. (3)
EDUC 752: Seminar in Instructional Uses of Computers (3)
EDUC 754: Seminar in Comp. for Ed. Admin. and Research (3)

The following symbol (A,B,C,D,2,3), found on the course selection schedules, refers to the class category on the overall requirement list and the number of credit hours for that specific course.

FULL TIME STUDENT

YEAR 1:

FALL -

EDCI 530: Programming Microcomputers in Basic (B3)
EDCI 705: Instructional Design (B3)
EDUC 529: Cultural Pluralism (A2)
Elective from Category D

SPRING -

EDCI 630: Super. and Organ. Inst. Uses of Micro. (B3)
EDUC 517: Overview of Computers and Sped. (B4)
EDSE 622: Augumentative Communication (B2)
Elective from Category C

YEAR 2:

FALL -
EDUC 590: Educational Research (A3)
EDUC 521: Foundations of Education (A2)
Two Electives from Category C

SPRING -
EDCI 730: Design. Learn. Act. for Micro. (B3)
EDSE 790: Practicum (B2)
Elective from Category C or
course offered in Spring of Year One

SELECT REMAINING COURSES FROM CATEGORIES C AND D

Seven course hours from category C and three course hours from category D are needed to fulfill the requirements for this degree program. Listing found on final page.

PART TIME FOCUSING ON 2 COURSES/SEMESTER

YEAR 1:

FALL - EDCI 530: Programming Microcomputers on Basic (B3)
Elective from Category D

SPRING - EDUC 517: Overview of Computers in Sped. (B4)
EDCI 630: Super. and Organ. Inst. Uses of Micro. (B3)

SUMMER - EDUC 590: Educational Research (A3)
Elective from Category C

YEAR 2:

FALL - EDCI 705: Instructional Design (B3)
Elective from Category C

SPRING - EDSE 622: Augmentative Communication (B2)
EDCI 730: Design. Learn. Act. for Micro. (B3)

SUMMER - EDUC 521: Foundations of Education (A2)
Elective from Category C

YEAR 3:

FALL - EDUC 529: Cultural Pluralism (A2)
EDSE 790: Practicum (B2)

SELECT REMAINING COURSES FROM CATEGORIES C AND D

Seven course hours from category C and three course hours from category D are needed to fulfill the requirements for this degree program. Listing found on final page.

SCHEDULE OF COURSE OFFERINGS

WHEN OFFERED	COURSE (HOURS)
FALL Semester	
	EDSE 659: Curriculum and Methods-ECH (3)
	EDSE 661: Curriculum and Methods-SPE (3)
	EDUC 699: Computer Applications in Education (3)
	EDCI 532: Programming Microcomputers in Logo (3)
	EDCI 530: Programming Microcomputers in Basic (3)
	EDCI 705: Instructional Design (3)
Both FALL and SPRING Semester	
	EDSE 550: Precision Teaching (3)
	EDSE 553: Teaching Remedial Mathematics (2,3)
	EDSE 648: Introduction to Psychological Testing (2,3)
	EDSE 654: Curriculum and Methods-ED (3)
	EDSE 657: Curriculum and Methods-LD (3)
	EDUC 590: Educational Research (3)
	EDUC 521: Foundations of Education (2)
	EDUC 529: Cultural Pluralism (2)
	EDSE 790: Practicum (2)
SPRING Semester	
	EDSE 554: Adaptive Methods in Education (2)
	EDUC 752: Seminar Inst. Uses of Comp. (3)
	EDUC 754: Seminar Comp. for Ed. Admin. and Research (3)
	EDCI 630: Super. and Organ. Inst. Uses of Micro. (3)
	EDUC 517: Overview of Computers and Sped. (4)
	EDSE 622: Augumentative Communication (2)
	EDCI 730: Design. Learn. Act. for Micro. (3)

CATEGORIES C AND D

CATEGORY C

WHEN OFFERED (HOURS)

FALL:

EDSE 659: Curriculum and Methods-ECH (3)
EDSE 661: Curriculum and Methods-SPE (3)

BOTH FALL AND SPRING:

EDSE 550: Precision Teaching (3)
EDSE 553: Teaching Remedial Mathematics (2,3)
EDSE 648: Introduction to Psychological Testing (2,3)
EDSE 654: Curriculum and Methods-ED (3)
EDSE 657: Curriculum and Methods-LD (3)

SPRING:

EDSE 554: Adaptive Methods in Education (2)

CATEGORY D

WHEN OFFERED (HOURS)

FALL:
EDUC 699: Computer Applications in Education (3)
EDCI 531: Programming Microcomputers in Logo (3)

SPRING:
EDUC 752: Seminar Inst. Uses of Comp. (3)
EDUC 754: Seminar Comp. for Ed. Admin. and Research (3)

Selection of seven course hours from category C and three course hours from category D are needed to fulfill the requirements for all students desiring to complete this degree program.

Course Requirements for M.Ed. in Special Education

COURSES	AREA OF SPECIALIZATION					
	ECH	ED	LD	SPH	SET	BMSE
EDSE 544: Vocational and Continuing Education Aspects of the Academically Handicapped (1)		x	x			Courses for one area (LD, ED, ECH, SPH) are required plus additional courses marked below
EDSE 550: Precision Teaching: Individual Instructional Procedures (2-3)	x	x	x	x	y	
EDSE 552: Language Development and Disorders (3)	x	x	x	x		
EDSE 553: Teaching Remedial Mathematics (2-3)		x	x		y	
EDSE 554: Adaptive Methods in Education (2)		x	x		y	
EDSE 620: Advanced Applied Behavior Analysis and Social Learning Theory (3)		x		x		
EDSE 622: Augmentative Communication (2)	x			x	x	
EDSE 643: Emotional and Behavioral Disorders of Children (3)		x				
EDSE 645: Characteristics of children with Learning Disabilities			x			
EDSE 647: Medical and Health Aspects of Handicapping Conditions (3)	x			x		
EDSE 648: Introduction to Psychoeducational Assessment (2-3)	x	x	x	x	y	
EDSE 649: Clinical Psychoeducational Assessment in Special Education (3)	x	x	x	x		Section C
EDSE 654: Curriculum and Methods - ED (3)		x			y	
EDSE 657: Curriculum and Methods - LD (3)			x		y	
EDSE 659: Curriculum and Methods - ECH (3)	x				y	
EDSE 661: Curriculum and Methods - SPH (3)				x	y	
EDSE 665: Family Intervention Programs for Handicapped Children (3)	x			x		
EDSE 668: Vocational and Leisure Education for Severely Handicapped				x		
EDSE 669: Transdisciplinary Approaches to Rehabilitation (2)	x			x		
EDCI 514: Administering and Supervising Pre-Elementary Education (3)	x					
EDGC 606: Counseling Theory and Practice (3)		x	x			
EDSE 782: Comprehensive Topics in Special Education: Trends and Issues (2)	x	x	x	x		
EDSE 790: Internship in Special Education (6)	x	x	x	x	x	
EDUC 509: Human Development (2)	x			x		
EDUC 529: Pluralism in U.S. Education (2)		x	x	x	x	
EDUC 590: Education Research (3)	x	x	x	x	x	
EDUC 521: Foundations of Education 92)	x	x	x	x	x	
EDCI 530: Programming Microcomputers in BASIC (3)					x	
EDCI 630: Super. and Organ. Inst. Use of Micro. (3)					x	
EDUC 517: Overview of Computers and Special Education (4)					x	
EDCI 701: Educational Program Development (3)					x	
EDCI 730: Design. Learn. Act. for Microcomputers (3)					x	
EDUC 699: Computer Application in Education (3)					z	
EDCI 532: Programming Micro. in LOGO for Instr. Appl. (3)					z	
EDUC 752: Seminar in Instructional Uses of Computers (3)					z	
EDUC 754: Seminar in Comp. for Ed. Admin. And Research (3)					z	
EDUC 532: Bilingualism and Language Acquistion Research (3)						x
Total Credits Required	41-43	42-45	39-42	42-44	37	42-48

x = course required y = 7 hours must be selected from courses marked "y"
z = 3 hours must be selected from courses marked "z"

JOHNSON STATE COLLEGE

David Slade
Department of Special Education
Johnson State College
Johnson, VT 05656

Phone: 802-635-2356

Number of special education students:

Undergraduate: Graduate:

Program Description:

Johnson State College offers an annual summer conference on special education technology. During the academic year, the College uses an infusion model, whereby technology is incorporated into many special education courses. The College also offers a stand-alone course.

TECHNOLOGY IN THE HIGHER EDUCATION CURRICULUM
A SMALL COLLEGE PERSPECTIVE

JOHNSON STATE COLLEGE
JOHNSON, VERMONT

All of the special education courses at Johnson State College have integrated within them some aspect of computer technology. Typically the lower level courses require less computer work than do the upper level courses. Students use the computer to review and evaluate software, chart student progress, develop I.E.P.s, set up data bases and design spread sheets-all within the core courses of the special education program. In addition, they are required to do all written assignments on the word processor.

Since education majors at Johnson State are required to take three special education courses, we are guaranteed that all our students will have a basic working command of a number of computer programs. We do not teach a course in programming, but rather recommend that the students take a basic programming course through the business department. In the future, we hope to offer a series of mini-courses through which our students will gain more extensive experience with educational software.

At the graduate level, all of the courses require the use of the computer at one level or the other. To promote the use of computers by teachers already in the field, a conference was held in the summer of 1986. This lead to a two credit course that was offered in the spring of 1987. For the winter of 1988, we are planning a session for teachers to share with their colleagues their "favorite" software.

FOUNDATIONS OF INTENSIVE SPECIAL EDUCATION: COMPUTER TECHNOLOGY IN SPECIAL EDUCATION

EDU 628

COURSE CREDIT:	2	INSTRUCTOR:	DR. DAVID SLADE
LENGTH:	5 WEEKS	OFFICE:	MC 120
MEETING PLACE:	MC RESOURCE CENTER	PHONE:	635-2356 (305)
MEETING TIME:	4:-7: T/TH MAY 12-JUNE 11	OFFICE HOURS:	BY APPT.

COURSE DESCRIPTION

This course examines computer technology that is applicable to the field of special education. The Apple IIe and IIGS computers are used in this course. Software that has direct applications in the day-to-day responsibilities of the special education teacher is studied.

COURSE COMPETENCIES

1. The student will use the Appleworks program to develop a word processor document that is relevant to his/her job situation.

2. The student will use the Appleworks program to develop a data base that can be used in his/her job situation.

3. The student will use the Appleworks program to develop a spread sheet that has a direct relationship to his/her job situation.

4. The student will use the Aimstar software to develop a program and to chart the performance of one of the children on his/her caseload.

5. The student will use the PennStar to develop an individual education program for one of his/her students.

6. The student will describe ways that computer technology can be used to enhance the educational services that we provide to disabled individuals.

7. The student will evaluate software to determine the appropriateness of the software for the individuals with whom he/she is working.

SESSION OUTLINE

Date	Topic	Assignment
5/12	Introduction Requirements Video: Computer Technology Getting to know the computer. (Apple IIe Tour)	
5/14	Apple IIGS Tour Intro to Appleworks	
5/19	Appleworks Word Processing	List-Specific Questions
5/21	Appleworks Word Processing	List-Specific Questions
5/26	AppleWorks Word Processing	Word Processor Draft
5/28	AppleWorks Data Base	Word Processor Document
6/2	AppleWorks Spread Sheet	Data Base Document
6/4	Aimstar Charting	Spread Sheet Document

5/4	Pennstar I.E.P.	Fimster Charting
5/11	Software Evaluation Story Machine The Newsroom Print Shop Software from Resource Center	Pennstar I.E.P.
TBA	Final Exam	Software Evaluations

LEARNING DISABILITIES IN THE REGULAR CLASSROOM
(EDU 345A)

COURSE CREDIT:	3	PROFESSOR:	DR. DAVID SLADE
LENGTH:	1 SEMESTER	OFFICE:	MC 120
MEETING TIME:	10:-11:15(TTH)	PHONE:	EXT. 305
MEETING PLACE:	MC 202	OFFICE HOURS:	2:15-4:(TTH)

TEXT

Mercer. C. (1987). *Students with learning disabilities* (3rd ed.). Columbus, Ohio: Merrill Publishing Co..

COURSE DESCRIPTION

This course reviews theories and practices relating to etiology, identification, and remediation of learning disabilities that interfere with effective pupil performance in ordinary elementary school environments. Emphasis is placed on cultivating insights rather than on step-by-step remediation.

COURSE COMPETENCIES

1. The student will list the salient features of and critically analyze at least 3 different definitions of learning disabilities (federal and Vermont definitions will be included).
2. The student will describe the history of the LD movement.
3. The student will state 10 potential causes of LD.
4. The student will describe and critically analyze traditional educational strategies that have been used with LD children.
5. The student will discuss traditional views of motivation, readiness, grouping, and individualization of instruction and offer more functional alternatives.
6. The student will describe characteristics, theories of etiology, and treatment strategies for the hyperactive student.
7. The student will compare diagnostic-prescriptive instruction and task analytic instruction.
8. The student will describe resource room design and functions as they relate to the education of the LD student.
9. The student will design a behavior management system that would be effective with LD students.

10. The student will discuss implications for the education of LD adolescents.

11. The student will write behavioral objectives for LD students.

12. The student will do a task analysis of a specific academic skill.

13. The student will identify the components of an I.E.P..

14. The student will develop instructional materials to be used with LD-students.

15. The student will describe specific strategies that are appropriate for the remediation of LD student deficits.

16. The student will describe applied behavior analysis techniques as they relate to LD students.

17. The student will describe the legal foundations for providing educational services to LD students.

18. The student will describe "metacognition".

19. The student will develop a "unit" for group instruction with LD students.

20. The student will describe six tests used to evaluate LD students.

21. The student will describe the screening and referral process.

22. The student will identify organizations that advocate for LD students.

23. The student will describe strategies to increase parent involvement.

24. The student will identify strategies for teaching transition and organizational skills.

25. The student will identify the essential components of an early intervention plan.

26. The student will describe techniques for teaching LD students in the following areas: math, reading, spelling, written language, oral language, and social skills.

27. The student will write all assignments using a computer word processor.

28. The student will evaluate computer software to determine if it is appropriate for use with LD students.

COURSE REQUIREMENTS

1. Quizzes (4)

   These will be unannounced and will cover the materials that were required reading for that day (there will be no make-up quizzes).

2. Hour Tests (2)

   These are scheduled in your session outline.

3. Final Exam

   This will be held during the time that has been designated by the Spring Semester Bulletin.

4. Task Analysis

   The task analysis will cover an academic skill.

5. Applied Behavior Analysis Strategy

   This will be a strategy that is specifically designed for use with an academic deficit and will be evaluated not only on accuracy but also on creativity.

6. Volunteer Experience

   Each student will volunteer for no less than 30 hours during the semester. The volunteer experience will be with learning disabled individuals. Each student will develop a unit that is appropriate for the particular situation in which he/she is involved; the materials to go with the unit will also be developed. Each student will keep a log of his/her daily experience. Points for this experience will be based not only on the number of hours that are put in but also on the quality of the student's performance and the quality of the written log that is submitted.

7. Class Participation

   Each student is expected to be actively involved during the class meetings. This involvement is expected to be positive and should reflect that the student is prepared for the session.

8. Research Paper

   Each student will write a research paper covering a topic from our session outline (topics must be approved by the professor). The research paper will be from 8 to 10 pages in length and contain a minimum of 20 references (books and articles from professional publications).

9. I.E.P.

Each student will write an I.E.P. using the format and student information that is presented in class.

10. Remediation Units (to include materials) (2)

The class will be divided into groups that will work on remediation units. These units will be appropriate for use by a teacher in a regular classroom with learning disabled students who are mainstreamed. These units will be judged on accuracy and creativity and must follow the format that is presented in class.

11. Computer Software Evaluations

A software evaluation process and programs will be provided. The student will evaluate each program according to the format provided.

**Please Note: Conditions for Acceptance of Assignments

1. All assignments will be done on a word processor (double spaced).
2. Assignments must be turned in on time (see the session outline). Students will be allowed a week grace period for one assignment. Any other assignment that is late will have 10% of the total possible points subtracted for each day that it is late.

Related Materials

TEACHING WITH CROSSWORD PUZZLES

Project RETOOL
Council for Exceptional Children

Prototype Technology Training Module
Developed by

Sharon R. Stewart and A. Edward Blackhurst

Department of Special Education
University of Kentucky

1987

CONTENTS

1. Overview
2. Lesson Plans
3. Transparency Masters
4. Completed Framed Lecture Outline
5. Sample Responses to Student Worksheets
6. Sample Examination Questions
7. Form for Evaluating Student Lab Products
8. References and Resources
9. Student Materials

LESSON PLAN

TOPIC: Teaching with Crossword Puzzles

MATERIALS:

Overhead projector and these transparencies:
- Crosswords T-1 through T-18
- 5 optional sample worksheet responses

Student Materials for each student, which include:
- Framed Lecture Outline
- "Uses of Crossword Puzzled with Exceptional Students" worksheet
- "Crossword Magic" abstract
- Computer Lab materials:
  - Microcomputer Lab Assignment: Generating Crossword Puzzles
  - "Crossword Magic" software program

OBJECTIVES:

Upon completion of this lesson and related activities, students will be able to...

1. Describe 8 different formats for crossword puzzles.
2. Explain how crossword puzzles can be used for assessment and instruction in reading/language arts, mathematics, social studies, science, and vocational preparation curricula.
3. Use a computer program ("Crossword Magic") to generate a crossword puzzle that can be worked at the computer and another that can be printed.
4. Design ways to integrate the use of crossword puzzles into the special education curriculum.

LECTURE CONTENT & ACTIVITIES:

HAND-OUT Distribute handouts to students for lecture and lab components.

T-1 ADVANCE ORGANIZER: Module Competencies (disclosure)

==> During this module, you will learn how to use crossword puzzles in your teaching. When you are finished with the module, you will be able to:

1. Describe different formats for crossword puzzles.
   - Eight different formats will be explained.

2. Explain how crossword puzzles can be used for assessment and instruction

    - You will study applications in reading and language arts, mathematics, social studies, science, and vocational education

    - An emphasis will be placed on how crossword puzzles can be used to facilitate different stages of learning in students.

3. Use a computer program to generate crossword puzzles.

    - The puzzles can be printed out (with answers) or students can work them at the computer.

    - You will have an opportunity to learn how to do both of these in a computer laboratory exercise.

4. Design ways to integrate the use of crossword puzzles into the special education curriculum.

    - In small groups, you will define an objective for which crossword puzzles can be used, describe an activity, specify the skill level, and describe the stage of learning for which that activity is appropriate.

NOTE: ==> You have several handouts in your package of Student Materials.

- The one entitled "Framed Lecture Outline" contains a framed outline which follows the lecture content.

    - During the presentation you can fill-in the missing information and make any additional notes on the outline.

- I will tell you what to do with the worksheet at the end of the handout later.

- An abstract is included that describes the features of the "Software Magic" computer program that you will be studying.

- The Microcomputer Lab Assignment contains instructions about what you will need to do to produce crossword puzzles in the microcomputer lab.

==> Turn to your Framed Lecture Outline to help you take notes.

I. CROSSWORD PUZZLE DESIGNS AND ACTIVITIES

==> A. Crossword puzzles can be made and used in a variety of ways. However, there are certain features which should be present in all crossword puzzles in order to assist students. These are:

--TITLE. The title should clearly indicate the content or focus of the puzzle.

--INSTRUCTIONS. Brief clear instructions should be included which tell the student what to do. The format examples which follow include such instructions.

- The following includes a discussion of the ways in which clues and answers can be presented and the kinds of activities which can be used. The three main topics include:

  -- formats for clues
  -- formats for answers
  -- variation activities

B. Formats for clues

1. By varying the format used for clues, puzzles can be designed which take into account the sutdents' reading ability, level of mastery, and the content. Some formats include-

a. Traditional. Clues are provided in the form of short phrases or sentences. Answers are entered in the appropriate spaces on the puzzle.

T-2 TRADITIONAL CLUE FORMAT (entire transparency)

EX: In this example, the crossword title is "Buildings." Students are instructed to "Read the clue and Write the answer in the puzzle." Clue #1 Down is "two family house". The answer "duplex" is written in the #1 down space. Clue #1 Across is "a place to park your car" and the answer "carport" is written in the #1 Across space.

b. Scrambled. Clues are provided in the form of scrambled letters. Students unscramble the word and write it on the puzzle.

T-3 SCRAMBLED CLUE FORMAT (entire transparency)

EX: Describe the example shown on the transparency. Identify the title, instructions, clues and answers as presented in example above.

c. Letter clues. Clues are provided in the form of words with certain letters already filled in. Students decide on the missing letters and write the entire word on the puzzle.

T-4 LETTER CLUE FORMAT (entire transparency)

EX: Describe example on transparency.

d. Cloze. Clues take the form of phrases or sentences with a missing word. Students decide what word belongs in the blank and write it on the puzzle.

T-5 SENTENCE COMPLETION FORMAT (entire transparency)

EX: Describe example on transparency.

NOTE: Sentence completion is synonymous with CLOZE

e. Pictures. Clues are provided in the form of pictures. Students determine what word corresponds to the picture and enter the word on the puzzle.

T-6 PICTURE CLUES FORMAT (entire transparency)

EX: Describe example on transparency.

NOTE: The circles could be replaced by coin stickers

==> DISCUSSION: Are there any questions?

- Are there any other clue formats that you have seen or can think of?
- If time permits, give examples of clues and ask students to identify which format is being used.

C. Formats for answers

1. Just as the format used for clues can be adapted for individual student differences, the answer formats can be modified to meet individual student needs. Some formats include -

a. Fill-in. The answer puzzle may already contain some of the letters or numbers which are needed in order to complete the puzzle. This format is similar to the "letter clues" format except that the letters are located in the puzzle instead of in the clue.

T-7 FILL-IN ANSWER FORMAT (entire transparency)

EX: Describe the example shown on the transparency.

b. Answers provided. The answers may be listed in random order across the top of the page. The student reads the clues, selects the correct answer from the list, and enters it on the puzzle.

T-8 ANSWERS PROVIDED ANSWER FORMAT (entire transparency)

EX:Describe the example shown on the transparency.)

==>DISCUSSION: Are there any questions?

- Are there any other clue formats that you have seen or can think of?

- If time permits, give examples of answer formats and ask students to identify which format is being used.

D. Activity variations.

1. In addition to varying clue and answer formats, activities using the puzzles can be varied. A few of the alternatives include:

T-9 WORK IN PAIRS OR TEAMS (disclosure)

a. Have students work in pairs or teams.

T-9 SELF-CHECK (disclosure)

b. Have students work puzzles as part of a learning center activity. Students can check their own answers if the teacher makes an answer key available.

2. Alternatives to the usual activity of having the student fill-in answers based on clues provided include --

T-9 VARY PURPOSES (disclosure)

c. Vary the purposes of the puzzle.

-- More will be discussed on this when we get to stages of learning.

T-9 PROVIDE ANSWERS (disclosure)

d. Provide the answers. Give the student an answer puzzle and have them write the clues.

T-9 STUDENTS DESIGN PUZZLES (disclosure)

e. Students design puzzles. Give the student an assignment to create a puzzle complete with clues and answers. This could be done individually, with a partner, or in a group. Students could develop a single puzzle around a theme or develop a puzzle book. The puzzles could be printed in a school or class newspaper for others to work or they could be designed for specific people.

EX: A student might research the life of pioneers in North America. One of the outcomes of the study might be developing a crossword puzzle which could be worked by others in the class.

T-10 VARIATION: PROVIDE THE ANSWERS (entire transparency)

EX: Here is an example of a puzzle in which the answers are provided and the student must develop the clues.

==> DISCUSSION: Are there any questions?

- Are there any other activity variations you can think of?

II. USES OF CROSSWORD PUZZLES FOR ASSESSMENT AND INSTRUCTION

==> Puzzles are typically used as a recreation activity. However, they can be used for variety of purposes in an instructional setting.

- The following includes a discussion of how puzzles can be used across variety of curricular areas, ability levels, and stages of learning.

- In addition, the uses of puzzles in assessment and advantages and limitations in the use of puzzles will be presented.

B. Curricular areas. If only commercially available, prepared crossword puzzles are used, one is obviously limited to those areas in which puzzles have been developed. However, if the teacher develops the puzzles, a variety of curricular areas may be addressed. Examples include:

T-11 READING/LANGUAGE ARTS (disclosure)

1. Reading/ language arts.

EX: OBJECTIVE - The student will write synonyms for vocabulary words.

ACTIVITY: Vocabulary words are provided as clues. Students are instructed to fill-in the puzzle with words that mean the same thing as the clue.

- Clue = concurrently
- Answer = simultaneously

EX: OBJECTIVE - The student will recall major facts about a story after reading

ACTIVITY: After students have read The Scarlet Letter, clues in the form of character descriptions and descriptions of objects of events from the book are provided. Students are instructed to fill-in the character, event, or object described by the clues.

- Clue = word represented by the letter "A"
- Answer = adultery

T-11 MATHEMATICS (disclosure)

2. Math

EX: OBJECTIVE - The student will correctly complete story problems involving addition & subtraction.

ACTIVITY: Story problems provide the clues. Students solve the problem and enter the answer on the puzzle

- Clue = Susan had 20 apples. She gave John, Paul, and Patti 3 apples each. How many apples does susan have left
- Answer = 11.

EX: OBJECTIVES - The student will add coin values up to $2.00 in value

ACTIVITY: Coin stamps are used in various combinations to make clues. Students add the values and enter the total in the puzzle

- Clue = 3 quarter stamps are displayed with + signs between followed by an equal sign and a blank space for the answer
- Answer = .75.

T-11 SOCIAL STUDIES (disclosure)

3. Social Studies

EX: OBJECTIVE - The student will identify the capital city of states when the name of the state is provided.

ACTIVITY: States are given as clues. Students are instructed to enter the corresponding capital city in the puzzle
- Clue = Indiana
- Answer = Indianapolis

T-11 SCIENCE (disclosure)

4. Science

EX: OBJECTIVE - The student will correctly label bones of the human body

ACTIVITY: A picture of a skeleton with the parts numbered is provided. Students fill-in the puzzle with the name of the bone
- Clue = a # is placed on the skeleton next to "kneecap"
- Answer - patella

T-11 VOCATIONAL (disclosure)

5. Vocational

EX: OBJECTIVE - The student will state the occupation which corresponds to a job description

ACTIVITY: Clues are job descriptions. Students write the job which corresponds to the description.
- Clue - fixes water pipes & faucets;
- Answer - plumber

==> DISCUSSION: Any questions?

- Can you think of any other curricular areas which could be addressed using puzzles?
- Are there any other examples that come to mind regarding how puzzles can be used pertaining to the curricular areas already mentioned?

C. Skill levels and prerequisite skills

1. Skill levels.

- If only commerically availbe puzzles are used, the teacher will be limited to what is available.
- If the teacher develops puzzles, the content and readability can be manipulated so that a variety of ability levels can be addressed. (Refer to the formats presented previously.)

- For example, puzzles can range from very simple ones in which picture clues are used and answers are listed on the puzzle sheet to much more difficult tasks in which students generate both the clues and the answers.

2. Prerequisite skills.

- Although crossword puzzles are flexible, certain prerequisite skills are required in order for students to be successful. These are as follows:

a. The students must have the concept of what a crossword puzzle is and how it is worked or used.

    - This can be taught via teacher demonstration and guided practice, if necessary.

b. The student must be able to "read" clues and write answers.

    - There are many modifications which can be made to assist students who are poor readers and writers.
        - For example, poor readers could be provided picture clues and answers could be written across the top of the page.
        - Good readers, on the other hand, might generate their own puzzles. these and other adaptations were presented in the format section.

==> DISCUSSION: Are there any question?

- Can you think of any other prerequisite skills?

T-12 STAGES OF LEARNING (disclosure)

D. Stages of learning

- Learning is the ability to perform new skills in progressively more complex situations.
- The five stages of learning represent different levels of learning which people pass through during the learning process.
- Different procedures have been found to be most effective at each stage. The following includes a discussion of the goal, general procedures, and appropriate uses of puzzles at each stage.

T-12 ACQUISITION (disclosure)

1. Acquisition stage.

   a. The goal of this first stage of learning is to establish a new target behavior in the learner's repertoire.

   - The learner may enter this level making frequent mistakes or being unable to perform the task and progress to a high percentage of accuracy.

   b. General procedures. At this stage, the teacher first should use tactics to help students perform the skill and then use tactics to facilitate improved accuracy.

   - Examples of tactics which may be used to improve performance include:
     - modeling (teacher demonstration followed by student imitation)
     - cues and prompts (providing "hints", pointing at the correct answer, etc.)
     - match-to-sample (correct answers are provided and the student must select which one is correct).
   - Selective use of these tactics serve to reduce error opportunities
     - A tactic which is often used to facilitate improved accuracy is error drill.
       - This involves providing drill specifically on those skills not yet mastered.

   c. Uses of puzzles. By carefully selecting among the various formats and activities described previously, crossword puzzles can help students perform more accurately at this stage. For example:

   - As students are first acquiring a skill, provide a puzzle and work it together with the class. The teacher can provide answers as needed, give clues, etc.
     - This would serve to demonstrate how crossword puzzles are worked as well as provide support for content.

- Vary the amount of support provided by selecting among the available formats for clues, answers, and activities. For example:
  - Answers might be provided or partially filled-in for students who need much support in spelling and later systematically faded as students become more proficient.
  - If formats and puzzle content are carefully selected, they can promote errorless learning.
- Crossword puzzles provide a fun alternative for error drill.
  - For example, multiplication facts which are repeatedly missed on seatwork and probes might be included in a puzzle as drill.

==> DISCUSSION: Any questions?

- Any other suggestions for ways in which crossword puzzles can be used at htis stage?

T-12 PROFICIENCY (disclosure)

2. Proficiency

a. The goal is for the learner to perform tasks accurately and rapidly.

- This differs from Acquisition in which accuracy is the objective.

b. General procedures.

- Typically, increasing rate of performance while maintaining high levels of accuracy is achieved through drill and repeated practice.

c. Uses of puzzles.

- Drill may become uninteresting for students, so using puzzles along with other drill formats may provide a motivating way of providing drill.
- The teacher can make the task more challenging by requiring that students complete the puzzle within a required time limit.

- For example, students may be required to spell words containing short a and e within 3 minutes.

- As they become more proficient, the number of words might increase or the time limit might decrease.

==> **DISCUSSION:** Any questions?

- Any other suggestions for ways in which crossword puzzles can be used at this stage?

T-12 MAINTENANCE (disclosure)

3. Maintenance

a. The goal is for the learner to continue to perform the learned task accurately and rapidly over time after direct instruction has been removed.

b. General procedures.

- Maintenance activities should be implemented periodically and, if neccesary, intermittent instruction may be useful.

- In addition to periodic practice, systematically fading the reinforcement schedule has been found to increase the probability of maintenance.

c. Uses of puzzles.

- Crossword puzzles could be used periodically as maintenance activities.

- They might be used as reinforcement for completion of other tasks and be used to monitor maintenance level simultaneiously.

  - For example, after completing a handwriting activity at an acceptable, the student could be given a puzzle pertaining to spelling rules which had been taught previously.

  - Based on the student's performance on the puzzle, the teacher could decide whether the teacher should review the spelling rules.

==> **DISCUSSION:** Any questions?

- Any other suggestions for ways in which crossword puzzles can be used at this stage?

T-12 GENERALIZATION (disclosure)

4. Generalization

a. The Goal is for the learner to perform the new task appropriately in new settings and situations.

- In this stage, the response remains the same, but students learn to perform the learned skill in response to new stimuli similar to those used during instruction.

b. General procedures.

- Generalization cannot be assumed and must be systematically implemented.
- Generalization can be taught by requiring students to perform the learned skill in the presence of different people, at different times, and in different physical settings.
- One tactic which can be used in this stage is that newly learned content can be intermixed with content previously learned.

c. Uses of puzzles.

- Introducing crossword puzzles as a new medium for performing a task can promote generalization of skills across tasks.
- In addition, students can be told to complete the puzzles in setting outside the immediate classroom or class period in which the content is usually presented.
- The clue format can be altered to promote generalization. For example, after a student is able to compute multiplication facts, the same facts could be presented in the form of story problems.

==> **DISCUSSION:** Any questions?

- Any other suggestings for ways in which crossword puzzles can be used at this stage?

T-12 ADAPTATION (disclosure)

5. Adaptation

a. The Goal is for the learner to modify the learned task to meet the learner's needs and the unique demands of the situation.

- Unlike the generalization stage, the response is modified in the presence of varying stimuli.

b. General procedures.

- Students must be provided opportunities to encounter as many new and different situations as possible in order to promote adaptation.

c. Uses of puzzles.

- There are a variety of creative uses of crossword puzzles which can promote adaptation. The activities previously mentioned in which students develop puzzles independently in order to display mastery of content, etc., are examples

==> **DISCUSSION:** Any questions?

- Any other suggestions for ways in which crossword puzzles can be used at this stage?

- If time permits, examples could be given and students could identify which of the five stages is being addressed

E. Assessment/monitoring

1. Crossword puzzles can be an entertaining method for assessing student knowledge.

- Obviously, the teacher must ensure that students possess the prerequisite skills before using puzzles.

- As the teacher develops puzzles, s/he must consider and plan for the influence one answer may have on another.

- Teachers may create puzzles which provide varying levels of feedback to students which may influence performance.

For example:

T-13 ASSESSMENT (entire transparency)

- Discuss transparency
    - Objective: for the student to accurately discriminate short a and e.

==> **DISCUSSION:** Are there any questions?

T-14 ADVANTAGES OF USING CROSSWORDS (disclosure)

F. Advantages and limitations of crossword puzzles

1. Although it has been demonstrated that crossword puzzles are highly flexible learning tools, they should be used judiciously.

   The following includes a list of advantages and limitations of crossword puzzles which should be considered.

   a. Advantages

T-14 IMMEDIATE FEEDBACK (disclosure)

- Provide immediate feedback re: correctiness

T-14 FLEXIBILITY (disclosure)

- Flexible in terms of content, cues provided, readability, etc.

T-14 SELF-CORRECTING (disclosure)

- Self-correcting - could have student check puzzle against answer puzzle

T-14 UNIQUE APPLICATIONS (disclosure)

- Unique task which is motivating
    - Tailored to students and teaching situation

T-15 LIMITATIONS OF CROSSWORDS (disclosure)

b. Limitations

T-15 BUSY WORK (disclosure)

- Can become "busy-work". List objectives to prevent this

T-15 TOO MANY CUES (disclosure)

- Use in assessment limited due to influence of answers on each other

- Cues can also influence selection of words

T-15 FORMAT LIMITS CONTENT (disclosure)

- Format limits content since only clues and answers which can be stated briefly can be used

T-15 FORMAT KNOWLEDGE REQUIRED (disclosure)

- Requires that students understand how to use crossword puzzles

T-15 SPELLING REQUIRED (disclosure)

- May be difficult for those with poor spelling skills

==> DISCUSSION: Are there any questions?

- Can you identify any other advantages and limitations?

III. OVERVIEW OF "CROSSWORD MAGIC"

A. CROSSWORD MAGIC is a materials generation software program. The abstract in your student materials provides a brief description of the program.

T-15 CROSSWORD MAGIC (Entire Transparency)

B. Purpose -- This program allows the user to create crossword puzzles which can be printed out or can be worked directly on the computer. They can be saved for future used.

- If a ditto master is inserted in the printer, the puzzle will be printed directly onto the ditto.

T-16.1 PUZZLE 2 (Entire Transparency)

- Display puzzle generated by the computer and discuss feature

  - NOTE that computer "arranged" the words and spacing

T-16.2 WORD LIST (Entire Transparency)

- Display word list

  - This can be printed on the puzzle page for those that need it

- NOTE: Computer generates an answer sheet to facilitate grading

C. Equipment -- This program can be used with a variety of types of microcomputers. See the abstract for a listing.

D. Using the program. (Specifics are in the Lab Assignment).

T-17 CROSSWORD MAGIC MENU (Disclosure)

- Program is "menu driven". Simply follow the prompts after making selections

  1. Load the program.

T-17 CREATE A PUZZLE (disclosure)

2. The main menu will come up automatically. Select from the main menu options.

   a. Create a puzzle. Allows the user to make a crossword puzzle. The user enters first the answers and then the clues. The program automatically organizes the puzzle. The user can control the puzzle size as well as the content.

T-17 PRINT A PUZZLE (disclosure)

   b. Print a puzzle. Allows the user to print the puzzle on paper. As illustrated in the prior transparency, among the options are:

      - an empty puzzle

      - clues

      - alphabetized listing of clues

      - answer puzzle

T-17 COPY A PUZZLE (disclosure)

   c. Copy a puzzle. Allows user to store a puzzle on another disk. This is useful because the user can keep copies indefinitely on disk.

T-17 ERASE A PUZZLE (disclosure)

d. Erase a puzzle. Allows user to erase individual puzzles which are no longer needed from the disk

T-17 FINISH A PUZZLE (disclosure)

e. Finish a puzzle. Allows user to finish making or working on screen a puzzle which was started previously.

T-17 EDIT A PUZZLE (disclosure)

f. Edit a puzzle. Allows user to review or change clues or answers in previously completed puzzle. Allows for individualization (vocabulary, content differences, etc.). Also enhances efficient use of puzzles.

T-17 PLAY A PUZZLE (disclosure)

g. Play a puzzle. Allows user to display a previously completed puzzle on screen for someone to work directly on the computer.

T-17 EXIT PROGRAM (disclosure)

h. Exit program. Allows user to leave program

==> DISCUSSION: Any questions regarding menu options?

T-18 CREATE A PUZZLE (Disclosure)

E. How to create a puzzle. The following includes a brief description of how the user can make a crossword puzzle.

T-18 Load the Program (disclosure)

1. Follow the loading instructions.

T-18 SELECT OPTION 1 FROM MENU (disclosure)

2. Select option 1 (Create a puzzle) from the menu

3. Decide whether you want to control the vertical and/or horizontal size of the puzzle. If not, the program will do so automatically based on answers entered.

T-18 ENTER ANSWERS (disclosure)

4. Enter answers. The screen will keep you informed of the size of the puzzle, the answers entered, and any words yet unused. Unused words will automatically be entered into the puzzle as opportunities occur.

T-18 ENTER CLUES (disclosure)

5. Enter clues for each answer.

T-18 SAVE, ETC.(disclosure)

6. After all answers and clues are answered, you can save, work on the screen, or print out. In addition, you may save uncompleted puzzles and work on them later. If you elect to save the puzzle, the program will ask you to give the puzzle a title.

7. Note that the CROSSWORD MAGIC program does not allow you to enter instructions nor does it allow you to use some of the formats for clues and answers suggested earlier, such as printing part of the answer on the puzzle.

==> DISCUSSION: Are there any questions?

- NOTE: You will do this in the lab assignment.

IV. USES OF CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS

A. It is obvious by now that crossword puzzles are a very flexible tool for instruction. This section focuses on specific uses of crossword puzzles with exceptional students:

==> REFER TO WORKSHEETS IN STUDENT MATERIALS

1. Have the students generate suggestions for use of puzzles using the worksheet as a guide.

   - First, ask individual students or small groups to circle a specified curricular area on the sheet.

   - Make sure that approximately the same number of students are addressing each curricular area. Ask students to complete the information on the handout including

     a. objective
     b. activity
     c. curricular areas, skill levels,
     d. stages of learning addressed

==> SAMPLE WORKSHEET RESPONSE (entire transparency)

- Select one of the 5 sample worksheet responses to model the response for the students

2. Have students present their suggestions before the class and make a list.

   - If students are slow to get started or if you want to fill in, use some of remaining sample worksheet response transparencies.

   - NOTE: You may want to collate ideas into a document which can be handed out in the next class.

V. SUMMARIZE THE LESSON

A. Crosswords serve a variety of instructional purposes

B. Crossword Magic is a software program for generating materials that allows users to make and work crossword puzzles

C. The program's flexibility allows it to be used for wide variety of curricular areas, ability levels, and learning stages.

D. Always tie the use of materials like crossword puzzles to meaningful objectives.

   - Have a rationale for their use, such as helping students develop skills in different stages of learning.

==> LECTURE CLOSURE

A. Discussion/ questions

B. Discuss the procedure and expectations for the lab component. Answer any questions about the lab assignment.

EVALUATION

- Select test items from Sample Evaluation Questions (or construct your own).

- Evaluate student lab products using evaluation guideline sheet.

TEACHING WITH CROSSWORD PUZZLES

ADVANCE ORGANIZER: Module Competencies:

1. Describe different formats for crossword puzzles.
2. Explain how crossword puzzles can be used for assessment and instruction.
3. Use a computer program to generate crossword puzzles.
4. Design ways to integrate the use of crossword puzzles into the special education curriculum.

TRADITIONAL CLUE FORMAT

TOPIC: Buildings

INSTRUCTIONS: Read each clue and write the answer on the puzzle.

CLUES:

ACROSS

1. place to keep your car

DOWN

2. two-family house

			D			
			U			
C	A	R	P	O	R	T
			L			
			E			
			X			

SCRAMBLED CLUE FORMAT

TOPIC: The 13 Original Colonies

INSTRUCTIONS: Unscramble each clue to make the name of one of the 13 original colonies. Write the name of the colony in the puzzle.

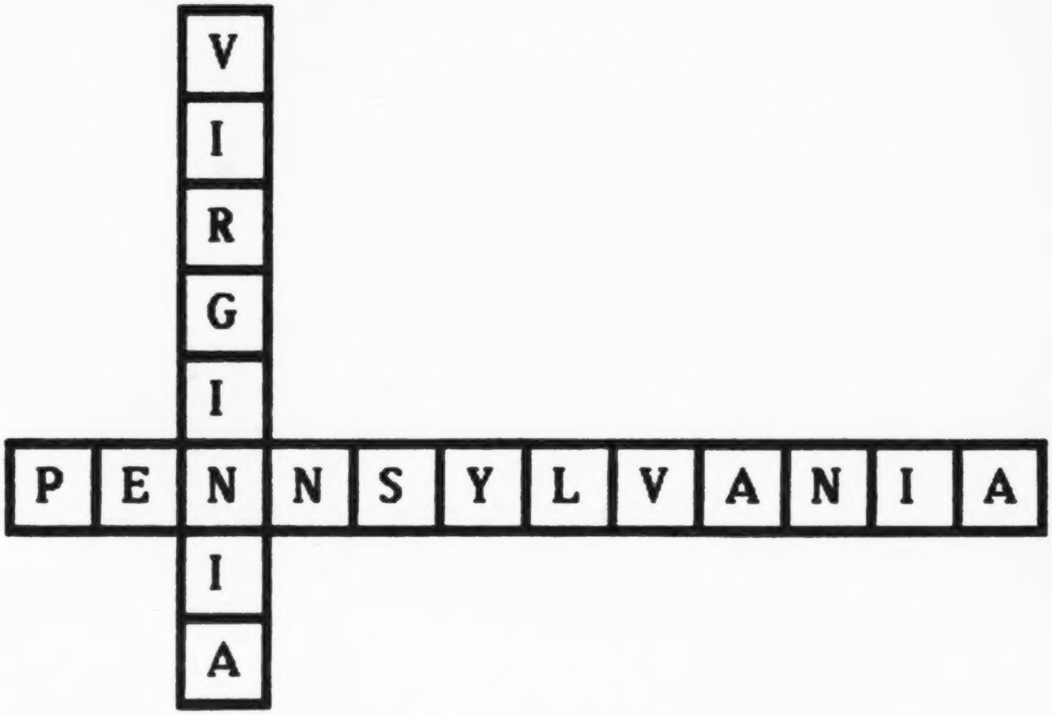
CLUES:

ACROSS

1. NYAAINLVSNEP

DOWN

1. IGNAIIRV



LETTER CLUES FORMAT

TOPIC: Fruit

INSTRUCTIONS: Read each clue and decide what letters are missing. Write the whole word in the puzzle.

CLUES:

ACROSS

1. S T _ _ _ B _ _ R Y

DOWN

1. P _ _ _ H

			P						
			E						
S	T	R	A	W	B	E	R	R	Y
			C						
			H						

SENTENCE COMPLETION CLUES FORMAT

TOPIC: Frogs

INSTRUCTIONS: **Read each clue and decide what word belongs in the blank. Write the whole word in the puzzle.**

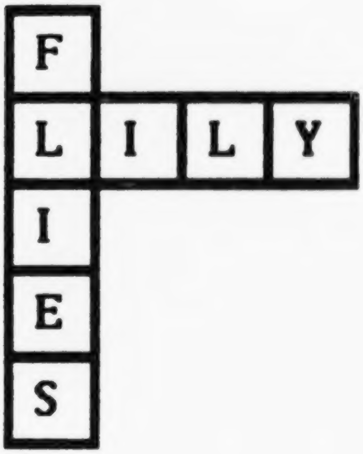
CLUES:

ACROSS

1. Frogs like to sit on ___ pads.

DOWN

1. Frogs like to eat _____.



PICTURE CLUES FORMAT

TOPIC: Adding Coins

INSTRUCTIONS: Add the coin values for each clue. Write the answer in the puzzle.

CLUES:

ACROSS

1. 25 + 25 = ____

DOWN

1. 5 + 5 + 5 + 5 + 25 = ____

4	
5	0

FILL-IN ANSWER FORMAT

TOPIC: Planets

INSTRUCTIONS: Read each clue and write the answer in the puzzle. Part of the answers have already been given to you.

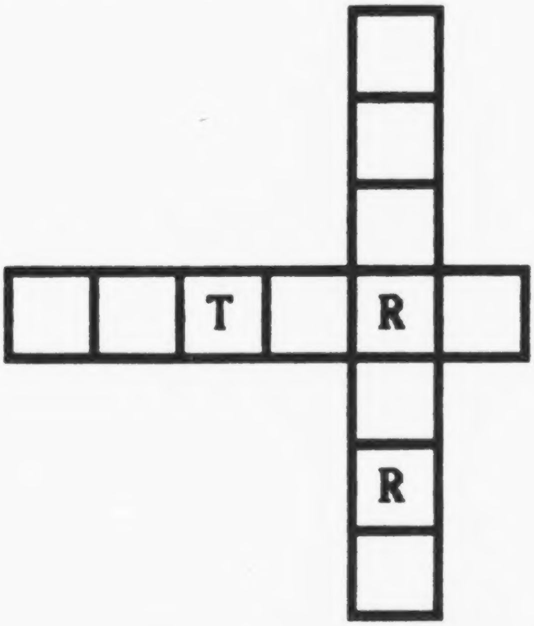
CLUES:

ACROSS

1. Has rings around it.

DOWN

1. Closest to the sun.



ANSWERS PROVIDED ANSWER FORMAT

TOPIC: _ight Words

INSTRUCTIONS: Read each clue. Find the answer at the top and write it in the blank.

RIGHT	LIGHT	NIGHT
FIGHT	MIGHT	SIGHT

CLUES:

ACROSS

1. Opposite of left.

DOWN

1. Argument.

	F			
R	I	G	H	T
	G			
	H			
	T			

ACTIVITY VARIATIONS

- → Work in pairs or teams.
- → Self-check
- → Vary purposes
- → Provide answers
- → Students design puzzles

VARIATION: PROVIDE THE ANSWERS

TOPIC: Presidents

INSTRUCTIONS: Write a clue for each answer in the puzzle.

CLUES:

ACROSS

1. ________________________________

DOWN

1. ________________________________

W	A	S	H	I	N	G	T	O	N
I									
L									
S									
O									
N									

CURRICULAR AREAS

- READING/ LANGUAGE ARTS
- MATHEMATICS
- SOCIAL STUDIES
- SCIENCE
- VOCATIONAL

FIVE STAGES OF LEARNING

1 - ACQUISITION

establish target behavior

2 - PROFICIENCY

perform behavior accurately and fluently

3 - MAINTENANCE

maintain proficient behavior over time

4 - GENERALIZATION

apply behavior to other settings and situations

5 - ADAPTATION

modify behavior according to unique demands of the situation

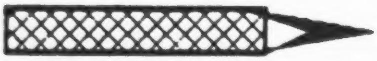
ASSESSMENT

TOPIC: Short A and E Words

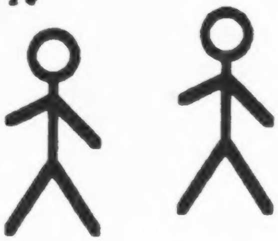
INSTRUCTIONS: Look for the picture clue.
Write the word in the puzzle.

CLUES:

ACROSS

1. 

DOWN

1. 

	M	
P	E	N
	N	

ADVANTAGES OF USING CROSSWORDS

1 - IMMEDIATE FEEDBACK

2 - FLEXIBILITY

3 - SELF-CORRECTING

4 - UNIQUE APPLICATIONS

LIMITATIONS OF CROSSWORDS

1 - DANGER OF "BUSY WORK"

2 - TOO MANY CUES PROVIDED

3 - FORMAT LIMITS CONTENT

4 - FORMAT KNOWLEDGE REQUIRED

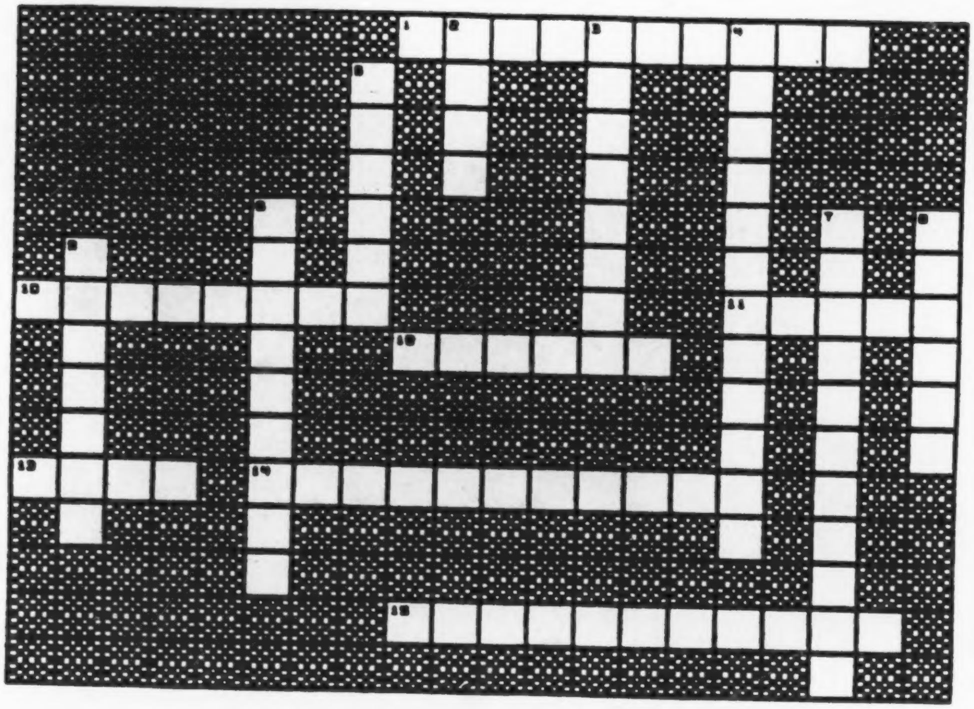
5. SPELLING REQUIRED

CROSSWORD MAGIC

PURPOSE

Computer software program that allows teachers to create crossword puzzles. The puzzles can be printed or students can work them directly on the computer.

PUZZLE 2



ACROSS CLUES

1. CROSSWORD MAGIC is a materials __________ software program
10. In the generalization stage, the _________ remains the same across settings and situations.
11. In the ______ format clues are phrases or sentences with missing words
12. The CROSSWORD MAGIC term used for answers that do not fit in the puzzle
13. CROSSWORD MAGIC option that allows you to make a file of puzzles on a storage disk
14. The learning stage in which a new behavior is established
15. Use puzzles at this learning stage to determine whether students have retained skill

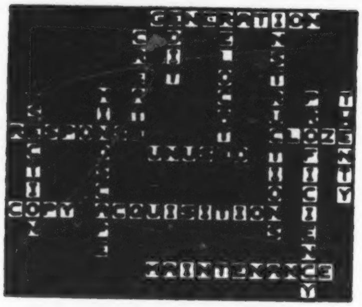
DOWN CLUES

2. A CROSSWORD MAGIC menu item which allows you to change a completed puzzle
3. A CROSSWORD MAGIC command in which a new position is found for an answer
4. All crossword puzzles should have a title and ___________
5. The CROSSWORD MAGIC menu item selected when you want to make a new puzzle
6. Publisher of CROSSWORD MAGIC
7. Learning stage in which both accuracy and time are considered
8. Maximum number of characters which can be contained in a CROSSWORD MAGIC answer
9. You print each CROSSWORD MAGIC puzzle section on a separate page using the _______ wait command

WORD LIST: CROSSWORD PUZZLE 2

ACQUISITION
CLOZE
COPY
CREATE
EDIT
GENERATION
INSTRUCTIONS
MAINTENANCE
MINDSCAPE
PROFICIENCY
RESPONSE
RELOCATE
SECTION
TWENTY
UNUSED

ANSWERS: CROSSWORD PUZZLE 2



CROSSWORD MAGIC MENU

1 - CREATE A PUZZLE

2- PRINT A PUZZLE

3 - COPY A PUZZLE

4 - ERASE A PUZZLE

5 - FINISH A PUZZLE

6 - EDIT A PUZZLE

7 - PLAY A PUZZLE

8 - EXIT PROGRAM

CREATE A PUZZLE

1 - LOAD THE PROGRAM

2- SELECT OPTION 1 FROM MENU

3 - ENTER ANSWERS

4 - ENTER CLUES

5 - SAVE AND ENTER TITLE,
WORK THE PUZZLE, OR
PRINT THE PUZZLE

USES FOR CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS
SAMPLE WORKSHEET RESPONSES

CURRICULUM AREA : *Reading and Language Arts*

OBJECTIVE :

The student will correctly spell words ending in _at and _et when provided picture clues.

ACTIVITY :

Students who have demonstrated maintenance level skills in spelling _at and _et words when each word family is presented individually will complete a crossword puzzle in which the word families are intermixed.

SKILL LEVEL: *Grade 2*

STAGE OF LEARNING: *Generalization*

OBJECTIVE :

The student will independently develop a crossword puzzle concerning the life and works of an American author after researching the life of that author.

ACTIVITY :

Each student in the class will research the life and works of a well-known author. (The student must obtain prior teacher approval of the author. A list of suggested authors is available from the teacher.) In addition to writing a term paprer about the author, each student will develop a crossword puzzle concerning some of the interesting facts about the author's life and writings. These puzzles will be compiled in a book and distributed to the entire class so the students can work them. This activity is intended to assist students in learning more about the authors that other students have selected in addition to the one they have researched.

SKILL LEVEL: *High School*

STAGE OF LEARNING: *Adaptation*

USES FOR CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS
SAMPLE WORKSHEET RESPONSES

CURRICULUM AREA : *Mathematics*

OBJECTIVE :

The student will add using regrouping in the 10's and 100's place when provided computation problems.

ACTIVITY :

Students will be provided the regrouping crossword puzzle as a math review assignment. Direct instruction in regrouping was halted two weeks ago, and math instruction is now focusing on other areas. If students perform at high levels of accuracy on the puzzle, the teacher will continue to review regrouping on an intermittent basis. If accuracy levels have dropped, the teacher will provide a review lesson in regrouping.

SKILL LEVEL: *Grade 2*

STAGE OF LEARNING: *Maintenance*

OBJECTIVE :

When provided the names of various shapes and pictures of the shapes, the student will match the name to the picture (trapezoid, octagon, etc.)

ACTIVITY :

As a fun activity for helping students acquire the new skill of identifying various shapes, students will complete a puzzle. Pictures of the various shapes will be provided as clues. Since many students still have difficulty naming the shapes, the answers will be written across the top of the puzzle. Students must select the correct answer and enter it in the puzzle.

SKILL LEVEL: *Grade 5*

STAGE OF LEARNING: *Acquisition*

USES FOR CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS
SAMPLE WORKSHEET RESPONSES

CURRICULUM AREA : *Social Studies*

OBJECTIVE :

The student will identify the last name of the inventor when provided the name of the invention. The task will be completed in 15 minutes.

ACTIVITY :

Students have been learning about inventions and inventors, but they are still very slow at being able to identify inventors and their inventions. The teacher wants them to be do this task rapidly and accurately since some of this content will be presented in timed tests at a later date. Consequently, the crossword puzzle is being used as a "drill and practice" task.

SKILL LEVEL: *Grade 6*

STAGE OF LEARNING: *Proficiency*

OBJECTIVE :

The student will identify capital cities when provided the names of countries.

ACTIVITY :

To ensure that students can apply what they have learned about countries and their capital cities beyond the immediate setting, students will be asked to complete a crossword puzzle on this topic as a homework assignment.

SKILL LEVEL: *Grade 5*

STAGE OF LEARNING: *Generalization*

USES FOR CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS
SAMPLE WORKSHEET RESPONSES

CURRICULUM AREA : *Science*

OBJECTIVE :

When provided a mural with numbered pictures of prehistoric creatures, the student will write the name of the creatures. Portions of the names will be provided to the students as an aid.

ACTIVITY :

As a follow-up activity to a new unit on prehistoric times, students will be asked to complete a crossword puzzle. The mural has already been discussed and portions of the puzzle have been filled in. Students have the option of working in pairs if they wish.

SKILL LEVEL: *Grade 4*

STAGE OF LEARNING: *Acquisition*

OBJECTIVE :

The student will be able to fill-in missing words in a cloze task pertaining to the ecosystem of the swamp.

ACTIVITY :

As the teacher provides instruction conerning the various ecosystems, s/he provides the crossword puzzle as a review on ecosystems previously taught. Student performance is analyzed and a review is provided on information which the students have not retained.

SKILL LEVEL: *Grade 8*

STAGE OF LEARNING: *Maintenance*

USES FOR CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS
SAMPLE WORKSHEET RESPONSES

CURRICULUM AREA : *Vocational*

OBJECTIVE :

The student will be write the name of engine parts when provided with a schematic diagram of the engine.

ACTIVITY :

Students in an auto mechanics class have been learning the parts of the engine by examining a real engine. In the crossword activity, students will have the opportunity to transfer their knowledge of auto parts to a two-dimensional diagram.

SKILL LEVEL: *High School*

STAGE OF LEARNING: *Generalization*

OBJECTIVE :

When provided the name of a vitamin or mineral, the student will identify the associated disease. Student performance will be timed.

ACTIVITY :

Students planning to pursue a health-related career field have received instruction on vitamin deficiency related to diseases. To assist students in being able to quickly identify these diseases a "drill and practice" activity will be provided in the form of a crossword puzzle.

SKILL LEVEL: *High school*

STAGE OF LEARNING: *Proficiency*

Sample Examination Items

NOTE: The items which follow are intended to serve as a pool from which questions might be selected for inclusion in an examination. It is not expected that all items would be included since several of them are quite similar.

True or False

(T) 1. An advantage of the Crossword Magic program is that it is flexible enough to allow the use to address many skill levels.

(T) 2. Both letters and numbers may be used in Crossword Magic answers.

(F) 3. Puzzles created using Crossword Magic cannot be worked on the computer screen.

(F) 4. A disadvantage of Crossword Magic is that uncompleted puzzles cannot be saved.

(T) 5. Only completed puzzles can be printed when using the Crossword Magic program.

(F) 6. A limitation of Crossword Magic is that it can only be used on the Apple II series of microcomputers.

(T) 7. The goal of adaptation is for the learner to spontaneously modify the learned task to meet the unique demands of the situation.

(F) 8. Most learners generalize a new skill spontaneously.

Fill-in

1. __(Crossword Magic)__ is the name of a software program that allows the user to create crossword puzzles.

2. When using the Crossword Magic program, the maximum length of answers is __(20)__ characters.

3. After entering the answers to the crossword puzzle in the Crossword Magic program, the user enters the __(clues)__.

4. The menu item in Crossword Magic which allows the user to change a puzzle already created is entitled "__(edit)__ a puzzle".

5. Crossword Magic falls under the classification of ___(materials generation)___ software.

6. When a student is functioning at the ___(acquisition)___ stage of learning, crossword puzzles can be used to help establish a new skill.

7. To keep crossword puzzles from being "busy work," the teacher should state ___(objectives)___ for each puzzle activity.

Short Answer

1. List and briefly describe the 8 options listed on the Crossword Magic menu.

2. Describe what happens when the user selects the CTRL-R option in Crossword Magic.

3. Describe what happens when an answer entered while creating a puzzle in Crossword Magic does not fit.

4. Describe the major difference between the use of crossword puzzles in the fluency stage and the acquisition stage of learning.

5. Give an example of how crossword puzzles can be used for generalization.

6. List and briefly describe the 5 formats for crossword puzzle clues.

7. Briefly state the advantages and limitations of the use of crossword puzzles in instruction.

8. Assume that you have a child in your class who is poor at reading, spelling, and writing. Describe how you might modify 1) clue formats, 2) answer formats, and 3) activities to meet the child's needs. Justify your choices.

ON

Draft 2

CROSSWORD MAGIC
Product Cover Sheet & Evaluation Checklist

Developer's name: ____________________

Puzzle title: ____________________

Product Cover Sheet

1. Complete the following information concerning areas addressed by the puzzle.

   Curricular area(s): ____________________

   Stage(s) of learning: ____________________

   Ability level(s): ____________________

2. List the instructional objective(s) of the puzzle.

3. Describe at least 3 activities for the puzzle which are consistent with the curricular area(s), stage(s) of learning, and ability level(s) addressed.

4. Attach a print-out of your work including:

   ___ Title and empty puzzle
   ___ Clues
   ___ Alphabetized listing of answers (at least 10)
   ___ Answer puzzle
   ___ Title, empty puzzle, & clues printed on one page; listing of answers and answer puzzle on second page

Evaluation Checklist

______ Appropriateness of puzzle to identified curricular area(s), stage(s) of learning, and ability level(s)

______ Appropriateness of the puzzle and stated uses to identified instructional objectives

______ Appropriateness of stated puzzle uses to identified curricular areas, stages of learning, and ability levels

______ Overall quality of the puzzle

Appropriate title
Contains at least 10 answers and corresponding clues
Clues are appropriate to answers and clearly stated
Answers are spelled correctly and relate to the title
Overall appeal

______ All components present on print-out

Title & empty puzzle
Clues
Alphabetized listing of answers (at least 10)
Answer puzzle
Title, empty puzzle, & clues on page 1; listing of answers & answer puzzles on page 2

Comments:

==

Overall Grade/Score:

TEACHING WITH CROSSWORD PUZZLES

STUDENT MATERIALS

COMPETENCIES:

Upon completion of this module, the student should be able to...

1. Describe different formats for crossword puzzles.
2. Explain how crossword puzzles can be used for assessment and instruction.
3. Use a computer program to generate crossword puzzles.
4. Design ways to integrate the use of crossword puzzles into the special education curriculum.

CONTENTS

1. Framed Lecture Outline
2. Worksheet - Uses of Crossword Puzzles with Exceptional Students
3. "Crossword Magic" Abstract
4. Microcomputer Lab Assignment: Generating Crossword Puzzles

TEACHING WITH CROSSWORD PUZZLES

FRAMED LECTURE OUTLINE

==

INSTRUCTIONS: Fill in the missing information on the outline. Use the empty spaces to make additional notes and add examples.

==

I. CROSSWORD PUZZLE DESIGNS AND ACTIVITIES

A. Features which should be present in all crossword puzzles are:

1. ____

2. ____

B. Formats for clues

1. ________________________. Clues are provided in the form of short phrases or sentences. Answers are entered in the appropriate spaces on the puzzle.

2. ________________________. Clues are provided in the form of scrambled letters. Students unscramble the word and write it on the puzzle.

3. ________________________. Clues are provided in the form of words with certain letters already filled in. Students decide on the missing letters and write the entire word on the puzzle.

4. ________________________. Clues take the form of phrases or sentences with a missing word. Students decide what word belongs in the blank and write it on the puzzle.

5. ________________________. Clues are provided in the form of pictures. Students determine what word corresponds to the picture and enter the word on the puzzle

C. Formats for answers

1. ________________________. The puzzle answer may already contain some of the letters or numbers which are needed in order to complete the puzzle. This format is similar to the

________________________ format except that the letters are located in the puzzle instead of in the clue.

2. ______________________. The answers may be listed in random order across the top of the page. The student reads the clues, selects the correct answer from the list, and enters it on the puzzle.

D. Activity variations.

1. ______________________
2. ______________________
3. ______________________
4. ______________________

II. USES OF CROSSWORD PUZZLES FOR ASSESSMENT AND INSTRUCTION

A. Curricular Areas. If the teacher develops the puzzles, a variety of curricular areas may be addressed. Examples include:

1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________

B. Skill levels. Prerequisite skills include:

1. ______________________
2. ______________________

C. Stages of learning. The five stages of learning represent ____

____

1. ACQUISITION STAGE

a. The goal of this first stage of learning is ______________

____.

b. At this stage, the teacher first should use tactics to

help students ______________________ the

skill and then use tactics to ______________________

____

--- tactics which can be used to improve performance include:

- ______________________________________

- ______________________________________

- ______________________________________

--- a tactic which is often used to facilitate improved

accuracy is ______________________.

c. Uses of puzzles for skill acquisition:

- ______________________________________

- ______________________________________

- ______________________________________

2. PROFICIENCY STAGE

1. The goal is for the learner to ______________

______________________. This differs from

______________________ in which accuracy is the objective.

2. Typically, increasing rate of performance while maintaining high levels of accuracy is achieved

through ______________________________.

3. Using puzzles (along with other drill formats) may be a motivating way of providing ________________. The teacher can make the task more challenging by

requiring that students complete the puzzle ______

____________________________.

3. MAINTENANCE STAGE

1. In this stage, the learner ____________________

______________________________________.

2. Maintenance activities should be implemented

_________________________ and, if necessary,

_______________________ may be useful.

3. Crossword puzzles could be used periodically as

________________________ for completion of

other tasks and be used to _______________ _____ simultaneously.

4. GENERALIZATION STAGE

a. In this stage, the learner ___________________

_____________________________________.

In this stage, the _________________________ remains the same, but students learn to perform the

learned skill in response to new ______________ similar to those used during instruction.

b. Generalization cannot be _____________________.

It must be ___________________. Generalization can be taught by requiring students to perform the

learned skill ______________________________.

Newly learned content can be __________________ with content previously learned.

c. Puzzles can be used to promote generalization by

- ____

- ____

- ____

5. ADAPTATION STAGE

a. The goal is for learner to ______________________

____. Unlike

the generalization stage, the ___________________

is modified in the presence of varying __________.

b. To promote adaptation students must be __________

____

c. There are a variety of creative uses of crossword puzzles which can promote adaptation such as:

- ____

- ____

- ____

D. Assessment/ monitoring

E. Advantages Limitations of crossword puzzles

1. Advantages

a. ____

b. ____

c. ____

d. ____

2. Limitations

a. ____

b. ____

c. ____

c. ____

e. ____

III. OVERVIEW OF "CROSSWORD MAGIC"

A. Crossword Magic is a ____________________ software program.

B. Purpose - ____

____

C. Using the program.

1. ______________________________________.

2. ______________________________________.

a. ____________________. Allows the user to make a crossword puzzle. The user enters first the ____________ and then the ____________.

b. ____________________. Allows the user to print the puzzle on paper. Among the options are:

-- ______________________________________

-- ______________________________________

-- ______________________________________

-- ______________________________________

______________________________. Allows the user to store a puzzle on another disk.

d. ______________________________. Allows the user to erase individual puzzles which are no longer needed from the disk

e. ______________________________. Allows the user to finish making or working on screen a puzzle which was started previously.

f. ______________________________. Allows the user to review or change clues or answers in previously completed puzzle.

g. ______________________________. Allows user to play a previously completed puzzle on screen.

h. ______________________________. Allows user to leave the program.

D. How to create a puzzle. The following includes a brief description of how Crossword Magic can be used to make a crossword puzzle.

1. ____

2. ____

3. ____. If not, the program will do so automatically.

4. ____

5. ____

6. After all answers and clues are answered, you can

   --____

   --____

   --____

   If you elect to save the puzzle, the program will ask you to give the puzzle a __________________________.

USES FOR CROSSWORD PUZZLES WITH EXCEPTIONAL STUDENTS

WORKSHEET

INSTRUCTIONS: Circle the curriculum area designated by the instructor. For the circled curriculum area describe two activities for use of crossword puzzles with exceptional students. State an objective for each activity and the skill area and learning stage for which the activity is appropriate.

CURRICULUM AREA (circle one)

Reading and Language Arts   Mathematics   Spelling

Social Studies   Science   Vocational

OBJECTIVE 1:

ACTIVITY 2:

SKILL LEVEL:

STAGE OF LEARNING:

OBJECTIVE 2 :

ACTIVITY 2:

SKILL LEVEL:

STAGE OF LEARNING:

Code of Ethical Conduct for Computer-Using Educators

An ICCE Policy Statement

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Please acknowledge the ICCE Ethics and Equity Committee.**

Preamble

Educators should believe in the essential importance of knowledge, morality, skill and understanding to the dignity and worth of human beings, individually and collectively. Educators develop the dignity and worth of their students through organized learning. As they do, they should defend the freedom to teach and to learn, and recognize that everybody should have an equal opportunity to learn. The duty to support these beliefs is not limited by the particular educator's role.

As an educator using computers, I work with an instrument that is changing the ways people teach and learn. I will use the computer and help learners and my colleagues use the computer only in ways that promote the dignity and worth of the learners. I accept the following code of ethics and will look to it when faced with unanticipated situations. I am willing to evaluate others and be evaluated on the basis of this code.

Principle I. Curriculum Issues

I have some responsibility for defining the roles of computers in the school curriculum and for assessing significant and likely intended and unintended consequences of those roles. In fulfilling these goals, I will:

a. Evaluate the type of computer instruction being given and to whom it is being given. The evaluation will examine planned and unplanned outcomes, including changes in the roles of teachers, students and administrators.

b. Judge where computers are and are not desirable in learning environments.

c. Strive toward integrating use of the computer, where appropriate, at all levels and throughout the curriculum.

d. Constantly evaluate the effectiveness of computer use toward achieving my goals.

e. When appropriate, provide teacher training for integrating computers into the curriculum and for the changes in curriculum that computer use brings.

f. Evaluate software covering controversial activities or using a controversial methodology or paradigm to determine its appropriateness for my students.

g. Ensure that my use of computers adequately reflects uses the student will have outside school now or in the future.

h. Ensure that the curriculum addresses topics related to information technology.

Principle II. Issues Relating to Computer Access

I support and encourage policies that extend equitable computer access to all students, and I will actively support well-reasoned programs and policies that promote such use. In fulfilling these goals, I will:

a. Strive to see that all students have equal access to computers and computer-related experiences. I will see that students have such access no matter what their academic potential, ethnicity, gender, socio-economic group, or special education status.

b. Support and encourage equity among schools in terms of availability and breadth of computer technology use.

c. Support and encourage equitable computer use among departments and subject areas.

d. Attempt to provide curriculum materials for computer use that will have meaning and appeal to all learning styles.

Principle III. Privacy/Confidentiality Issues

I have varying degrees of responsibility for the development of policy that guarantees the proper use of computerized and non-computerized information in the school's possession. In fulfilling these goals, I will:

a. Respect the privacy of others and exercise this respect when handling computer-stored information.

b. Review the use of computer systems and networks to ensure appropriate confidentiality and privacy for all.

c. Ensure that access to data bases does not exceed the limitations of use granted at the time the data were provided.

d. Teach to those I supervise the legal and social responsibilities that attend collecting, manipulating and disclosing data—in school and in society.

Principle IV. Teacher-Related Issues

Administrators and curriculum supervisors are responsible for overseeing the proper use of computers in the school setting, whether as a tool for teachers or as a multipurpose technology for students. In order to redefine the teacher's role in light of the integration of computers into classrooms, each teacher must have a minimum level of general computer literacy, including skills and knowledge about computers appropriate to the classroom setting and subject area. In addition, each teacher must accept the responsibility to practice as a professional according to the highest ethical standards. In fulfilling these goals, administrators and curriculum supervisors will:

a. Strive to obtain teacher training appropriate to needs for classroom use of computers.

b. Include planning for equitable management of computer resources.

c. Participate in evaluation of results of educational computer use.

d. Strive to provide teachers with release time for computer training to a level of competency consistent with their projected use of computers.

e. Give attention to teaching students the ethics of computer use.

f. Participate in the selection of computer use goals.

g. Strive to provide opportunities for teachers to learn about future situations when making decisions about the pace and nature of computer integration.

h. Strive for computer literacy for both teachers and students.

i. Consider likely future situations when making decisions about the pace and nature of computer integration.

j. Help teachers keep up with current trends, research and literature related to computer developments affecting education and with the curricular implications of these developments.

Principle V. Student Issues

One way to measure success is by the progress of each student toward realization of potential as a worthy and effective citizen. To help fulfill this goal, I will:

a. Help students learn about future trends and possible impacts and consequences of a computerized society.

b. Demonstrate respect for computer ethics in the school, which includes not permitting unauthorized duplication of software by my students.

c. Ensure that students have opportunities to evaluate their current and future roles and the impact their actions can have on future consequences in a computerized society.

d. Help students learn to evaluate the models which underlie simulations on which major societal decisions are made.

e. Help students examine issues that relate to computer ethics.

Principle VI. The Community

The general community, parents and educators share responsibility for creating learning environments. In fulfilling responsibilities to the community, I will:

a. Provide training to members of the educational or general community when asked and when practical.

1. Increase parental and community knowledge of possible educational goals that involve computers and of how these

goals can be realized

2. Encourage parental involvement in long-term planning of computer use.
3. Coordinate expectations for computer use between home and school.

b. Extend the standards of respect for copyright into school/community interactions.

c. Evaluate what control donors should have over the use of hardware and software they provide.

Principle VII. School Organizational Issues

Effective and efficient use of computers in education requires organizational support. In fulfilling this responsibility, I will:

a. Participate in short- and long-range plans to introduce and manage hardware and software in schools.

b. Encourage the development and maintenance of adequate support structures within the school district and region.

c. Encourage funding for computers in schools according to a planned strategy for their integration.

Principle VIII. Software Issues

I have some responsibility for the acquisition, development and dissemination of software in the school environment. In fulfilling these responsibilities, I will:

a. Discourage and refuse to support unauthorized duplication of software by students or educators.

b. Discourage and refuse to support unauthorized duplication of printed material related to copyrighted software.

c. Evaluate the quality of software for classroom use.

d. Analyze software for equitable gender and ethnic representation.

e. Acknowledge the ethics of developers and vendors who adhere to truth in advertising and marketing, who deliver a product that serves learners' interests and needs, and who promote equity.

f. Encourage, through purchasing decisions, those vendors who make reasonable provisions for backup copies and multiple access.

g. Evaluate software in the light of the needs of prospective users and the goals of school and community.

Principle IX. Hardware Issues

I share responsibility for the quality and improvement of hardware used by educators and students. In fulfilling this responsibility, I will:

a. Set standards for the acquisition, development and dissemination of hardware used in education.

b. Respect the efforts and expertise of hardware developers and vendors, particularly when they risk extending the uses of the computer.

c. Acknowledge the ethics of developers and vendors who adhere to truth in advertising and marketing, who deliver a product that serves learners' interests and needs, who make provision for after-sale maintenance and training, and who promote equity.

d. Allow for cooperative participation of teachers and administrators in the selection of equipment.

e. Develop and communicate criteria for hardware used in education.

f. Plan hardware purchases that address longitudinal strategies for computer use in schools.

The Board of Directors of the International Council for Computers in Education approved this policy statement December, 1986.

The members of the ICCE Ethics and Equity Committee are:

Chair, Daniel T. Shere, Director of Finance, Employment Readiness Support Center
Lana Bernhardt, Principal, Kibbutz Hanita Elementary School
Larry Hannah, Professor, Sacramento State University
Deryn Watson, Computers in the Curriculum, Chelsea College
Doris Ray, Project Director, Maine Computer Consortium
Brent E. Wholeben, Professor, University of Texas at El Paso
Jo Ann Wilton, Coordinator of Computer Education, Peel Board of Education, Mississauga, Ontario

For more information contact Daniel T. Shere, 7890 E. Spring #2G, Long Beach, CA 90815.

MICROCOMPUTING COMPETENCY SELF-ASSESSMENT FOR SPECIAL EDUCATION PROFESSORS

A. Edward Blackhurst
Department of Special Education
University of Kentucky
1986

DIRECTIONS: For each of the competencies in the following list, indicate your level of interest and priority for training. Circle the letter that best corresponds to your opinion. Place an asterisk in front of the numbers of the items that would be of highest priority for you. Use the following key:

X = Not interested in this competency
C = Already competent in this area
I = Have some skills in this area; want to improve them
A = Interested in developing an awareness in this area
S = Want to develop skills in this area

Using a Microcomputer as an Aid to Personal Productivity

1. Use a word processor to prepare class notes, manuscripts and other written documents. X C I A S

2. Use utilities, such as mail merging programs and spelling checkers. X C I A S

3. Use database programs to maintain records. X C I A S

4. Use a microcomputer to maintain files of reference materials, annotations, and bibliographies to support research and writing. X C I A S

5. Perform statistical analyses with microcomputer software. X C I A S

6. Use graphics software to prepare charts and graphs for research manuscripts and presentations. X C I A S

7. Use a spreadsheet program to manipulate budgets and fiscal records. X C I A S

8. Use electronic message services, such as "SpecialNet". X C I A S

Using the Microcomputer as an Aid to Instruction in College Courses

9. Use microcomputer systems to prepare instructional materials, such as transparencies. X C I A S

10. Use computer programs to support drill and practice, tutorial, simulation, and problem solving activities in classes taught. X C I A S

X = Not interested in this competency
C = Already competent in this area
I = Have some skills in this area; want to improve them
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11. Store questions in computerized test banks and generate examinations. X C I A S

12. Use gradebook software programs to store student grades. X C I A S

Selection and Operation of Microcomputer Equipment

13. Conduct comparative analyses of microcomputer hardware and related equipment in order to make selection decisions. X C I A S

14. Set up microcomputer equipment and test it to ensure that it will operate correctly. X C I A S

15. Configure software to ensure that all of its features will work properly with the microcomputer equipment being used. X C I A S

16. Install peripheral devices that enhance the capabilities of a microcomputer (e.g., modems, printers, extra memory, clock cards). X C I A S

17. Use mass storage devices, such as hard disks. X C I A S

18. Use simple diagnostics to determine problems and perform routine maintenance of microcomputer hardware and software. X C I A S

19. Use system commands and utilities needed to load, run, save, and copy programs. X C I A S

Providing Instruction about Microcomputer Applications in Special Education

20. Define terms and concepts related to microcomputer applications in special education. X C I A S

21. Identify major issues associated with the use of microcomputers in special education. X C I A S

22. Articulate goals and a philosophy for using microcomputer technology in special education. X C I A S

23. Describe research on microcomputer use in special education. X C I A S

24. Teach ways to evaluate microcomputer software for its potential in teaching exceptional individuals. X C I A S

X = Not interested in this competency
C = Already competent in this area
I = Have some skills in this area; want to improve them
A = Interested in developing an awareness in this area
S = Want to develop skills in this area

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25. Select and demonstrate software programs that are appropriate for use with exceptional children. X C I A S

26. Teach how tool uses of microcomputers, such as word processing and databases, can be used with exceptional students. X C I A S

27. Demonstrate commercial software programs designed to generate IEPs and analyze the results of educational or psychological assessments. X C I A S

28. Show how to use adaptive devices for environmental control and how to make computers accessible to those with physical or sensory impairments. X C I A S

29. Teach how to evaluate the effectiveness of microcomputer applications in special education. X C I A S

30. Teach how to integrate microcomputer use into curricula for exceptional children. X C I A S

31. Provide information about resources available to support the use of microcomputers in special education. X C I A S

32. Explain ethical considerations related to uses of microcomputer technology in special education. X C I A S

Using Microcomputers to Meet Service Responsibilities

33. Conduct needs assessments related to the use of microcomputers in special education. X C I A S

34. Consult with special education teachers about their use of microcomputers. X C I A S

35. Provide in-service training about microcomputer use in special education. X C I A S

36. Identify sources of funding for microcomputer hardware and software for special education programs. X C I A S

37. Prepare proposals for the funding of special education microcomputer projects. X C I A S

Computer Programming and Related Skills

38. Copy and run computer programs from program listings in books and computer magazines. X C I A S

X = Not interested in this competency
C = Already competent in this area
I = Have some skills in this area, want to improve them
A = Interested in developing an awareness in this area
S = Want to develop skills in this area

39. Design computer assisted instruction programs that could be programmed by those who have programming skills. X C I A S

40. Use pre-packaged software authoring systems to prepare computer assisted instruction lessons for students. X C I A S

41. Use authoring languages (such as PILOT) to create computer assisted instruction lessons for students. X C I A S

42. Modify computer programs to make them more useful with special populations. X C I A S

43. Write computer programs using high level languages, such as BASIC or Pascal. X C I A S

List any other items that are of interest to you but do not appear in the above list of competencies:

Rank order the items that have asterisks next to them according to their importance to you. Then rank order the other items rated I, A, and S.

The results of this analysis should provide you with a list of priorities to guide a professional development program related to the use of microcomputers. The asterisked items should be your primary skill objectives. The other items rated S or I should serve as secondary skill objectives. Those rated an A should serve as awareness objectives.

Creating a Personal Plan for Microcomputer Competency

Dave L. Edyburn

Introduction

Special educators interested in learning about microcomputers and related technology may experience difficulty in achieving a personally satisfying level of competence. These problems may result from (1) the inability to identify specific relevant aspects of technology in which to study, considering the bewildering array of potential topics for learning, and/or (2) the inability to identify appropriate learning experiences on the selected topics. As a result, either of these problems may effectively prevent the realization of one's goals for learning about microcomputers. Further, the problem is compounded by the fact that we often do not know what it is that we want to learn or know the actual consequences of learning something until after we have finished studying it.

The creation of a personal plan for microcomputer competency allows special educators to evaluate their experience and personal goals for using microcomputers. Such a plan then becomes an invaluable guide for planning and participating in personally relevant learning experiences about microcomputers and related technology.

Rationale for Creating a Personal Plan

The idea of encouraging teachers to take responsibility for developing their own personal microcomputer competency plan is not new. Hofmeister (1984) noted that such plans should include two major components: (a) the skills you wish to attain, and (b) the activities which will facilitate such skill development. Moursand (1983) speaks of this concept of a personal development plan as a Individual Computer Literacy Education Plan (ICLEP). He outlined two main parts of this plan: (1) a plan for gaining general computer literacy as might be expected of all educators and (2) a second part which is specific to the educator's particular professional responsibilities. Goals should be both short and long term with specific objectives that provide ways to measure progress towards these goals.

Clearly, a teacher may be interested in developing such a plan but only be able to articulate, "I want (or need) to learn about computers." Given the vast number of computer related topics one could study, such a teacher could find her/himself in spending a lot of time and energy in activities that are not necessarily pertinent to her/his teaching/learning needs. As one teacher has aptly summarized, "I'd like to have an idea of what computers can do, not learn everything they can do, but just know what can be done if I were interested" (NNM, 1986). Thus far, no guidelines exist for creating personal plans. This instrument and taxonomy attempts to (1) assist the special educator in identifing and operationalizing their perceived learning needs regarding microcomputers and (2) to determine the depth of training experience they desire on each of the identified topics.

Creating a Plan

This taxonomy was designed to assist special educators in evaluating their previous experience with microcomputers and their personal goals with which they would like to achieve for using computers in their instructional program. The taxonomy provides an overview of potenital applications of microcomputers in education.

To create such a plan is only part of the total process. The following steps have been modified from a suggested outline for vocational educators by Roth and Tesolowski (1984) for developing a personal plan for microcomputer competency:

A1. Define elements of a local education agency plan for computer based instruction
A2. Define the special educator's role in the local agency plan for computer based education
A3. Conduct a personal assessment of microcomputer competency
A4. Set personal goals for microcomputer competency
A5. Construct a personal plan for microcomputer competency
A6. Implement a personal plan for microcomputer competency
A7. Evaluate personal plan based on computer innovations
A8. Modify personal plan as needed

The primary focus of the instrument that follows is on step A3. Completion of this activity will provide the participant with the necessary tools to complete steps A4 through A8. These results are suitable for use at three levels: personal summaries, group summaries within a district or special education cooperative, and for research purposes.

Pages 1-5 are designed to obtain descriptive data about the individual. Whereas this information may not be perceived as intrinsically valuable when the tool is used as a personal summary, its value grows when used for research purposes or as a group summary. The taxonomy of potential learning topics regarding microcomputers are organized around four levels:

0.00 Prerequsite skills/Introduction

1.00 Hardware and Accessories

2.00 Microcomputer Applications

3.00 Courseware

Final Comments

The Personal Plan was intended to be completed in cooperation with a facilitator knowledgable about computers and later refined by the individual and a self-selected mentor. Therefore, the completed plan will be truly reflective of an individual's perceived needs while respecting his/her professional standing and the every present constraints of time and energy.

Given these noble goals, I share the sentiments of Samuel Johnson who noted the following words in the dedication of his great taxonomy:

> When I took the first survey of my undertaking, I found...there was perplexity to be disentangled, and confusion to be regulated; choice was to be made out of boundless variety, without any established

> principle of selection...
>
> Samuel Johnson
> in the Preface to A Dictionary of the English Language, 1755

The taxonomy was originally developed as a response to the endless questions special education teachers had about computers and the frequency with which they felt overwhelmed, belittled, and discouraged in learning about the instructional applications of microcomputers. Initially I began by asking teachers, who were computer novices, what it was they wanted to learn about computers. Second, topics were identified by reviewing popular computing periodicals including: Family Computing, PC Week, Government Computer News, T.H.E. Journal, Electronic Learning, and The Computing Teacher. Third, a review of the literature on staff development with microcomputers was conducted. Finally, the materials were reviewed with colleagues familiar with computers to evaluate the organizational relationships of the taxonomy.

Interested individuals may wish to contact the author regarding:

a) comments, questions, or suggestions for revisions;
b) permission to reproduce and administer the plan;
c) new revisions of the plan and taxonomy.

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CREATING A PERSONAL PLAN FOR MICROCOMPUTER COMPETENCY

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